PB83-183160

Environmental Impact Statement
Twin Oak Steam Electric Station
Robertson County, Texas

(U.S.) Environmental Protection Agency
Dallas, TX

Mar 83

U.S. Department of Commerce
National Technical Information Service
NTIS

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

EPA is proposing issuance of a NPDES permit to TUGCO for discharge of cooling water from two 750 Mw power generating units into Duck Creek, a tributary of the Navasota River. Approximately 3400 acres will be utilized for the power plant site, including 2330 acres for a cooling reservoir constructed on Duck Creek. Make-up water to fill or supplement the reservoir will be pumped via a 12-mile pipeline from Lake Limestone. Wastes such as bottom ash, fly ash, and other solids will be disposed in on-site landfills. Electricity will be conveyed from the power plant by a transmission system containing 3089 acres of right-of-way. Lignite to fuel the plant will be transported 8 miles by trains from the 3 deposits totaling approximately 33,000 acres. The power plant will require 280 million tons of lignite during the 35-year life of the project.

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United States
Environmental Protection
Agency

Region 6
1201 Elm Street
Dallas, TX 75207

EPA 906/9-83-004
March 1983

Water

PB83-183160

EPA

Environmental Impact Statement

Final

Twin Oak Steam Electric Station
Robertson County, Texas

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United States
Environmental Protection
Agency

Region 6
1201 Elm Street
Dallas, TX 75207

EPA 906/9-83-004
March 1983

Water

EPA

Environmental Impact Statement

Final

Twin Oak Steam Electric Station
Robertson County, Texas

i.a

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

February 23, 1983

TO ALL INTERESTED AGENCIES, OFFICIALS, PUBLIC GROUPS AND INDIVIDUALS:

The Environmental Protection Agency (EPA) has prepared this Final Environmental Impact Statement (EIS) concerning issuance of a new source National Pollutant Discharge Elimination System (NPDES) permit for wastewater discharge from the Twin Oak Steam Electric Station in Robertson County, Texas. The document has been prepared in compliance with the National Environmental Policy Act of 1969 and implementing regulations.

Because changes from the Draft EIS are minor, this Final EIS incorporates the Draft EIS by reference and includes the following: (1) a revised and updated summary; (2) comments received on the Draft EIS and EPA's responses; (3) revisions necessary to the Draft EIS; and (4) EPA's preferred alternative.

The Final EIS is being distributed to those who made comments on the Draft EIS and to those who requested a copy. Comments or inquiries on this EIS should be addressed to Mr. Clinton B. Spotts, Regional EIS Coordinator, at the above address by the date stamped on the cover sheet following this letter.

Sincerely yours,

Dick Whittington, P.E.
Regional Administrator

1.b

FINAL ENVIRONMENTAL IMPACT STATEMENT
TWIN OAK STEAM ELECTRIC STATION
IN ROBERTSON COUNTY, TEXAS

RESPONSIBLE AGENCY: US Environmental Protection Agency, Region 6

COOPERATING AGENCY: Texas Railroad Commission

ADMINISTRATIVE ACTION: Issuing a New Source National Pollutant Discharge Elimination System (NPDES) permit to Texas Utilities Generating Company (TUGCO) for discharge of wastewater from the Twin Oak Steam Electric Station (TOSES) into Duck Creek.

CONTACT FOR FURTHER INFORMATION:

Clinton B. Spotts, Regional EIS Coordinator
US Environmental Protection Agency
1201 Elm Street
Dallas, Texas 75270
(214) 767-2716 or FTS 729-2716

ABSTRACT: EPA is proposing issuance of a NPDES permit to TUGCO for discharge of cooling water from two 750 MW power generating units into Duck Creek, a tributary of the Navasota River. Approximately 3,393 acres will be utilized for the power plant site, including 2,330 acres for a cooling reservoir (Twin Oak Reservoir) constructed on Duck Creek. Make-up water to fill or supplement the reservoir will be pumped via a 12-mile (109-acre) pipeline from Lake Limestone. Wastes such as bottom ash, fly ash, and other solids will be disposed in on-site landfills. Electricity will be conveyed from the TOSES by a transmission system containing 3,089 acres of rights-of-way (1,502 acres of new rights-of-way). Lignite to fuel the TOSES will be transported 8 miles by electrical powered unit trains from three deposits totaling approximately 33,000 acres. About 822 acres of rights-of-way will be utilized by the rail system. The TOSES will require approximately 280 million tons of lignite during the 35-year life of the project. Notable effects associated with construction and operation of the TOSES and transport systems include increased erosion of soils; changes in intensity and possibly direction of runoff; increased air emissions of particulates, SO_2, and NO_x; increased noise levels; decrease in lotic and forested habitats; increase in lentic habitat; permanent conversion of portions of all land types to industrial use; visual degradation; and positive economic effects such as increased employment and revenues. Adverse effects from mining and reclamation include many of the above as well as an overall leveling of topography; possible decreased acreages of prime farmland; minor reduction in hunting and recreational opportunity; lowering of groundwater levels locally; possible acid leaching; and potential disturbance and mitigation of historic or prehistoric sites. Most of the positive effects of the project stem from economic benefits such as lignite royalities, increased tax base, and new jobs.

COMMENTS ON FINAL EIS DUE: 25 APR 1983

Responsible Official

for Dick Whittington, P.E.
Regional Administrator

i.c

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PREFACE

On October 1, 1982, the US Environmental Protection Agency (EPA) filed a Draft Environmental Impact Statement (EPA 906/9-82-010) concerning issuance of a new source National Pollutant Discharge Elimination System (NPDES) permit to Texas Utilities Generating Company (TUGCO) for discharge of wastewater from the Twin Oak Steam Electric Station (TOSES) into Duck Creek, a tributary of the Navasota River. Since that time, EPA has received and reviewed public comments on the Draft EIS and has determined its preferred course of action with regard to NPDES permit issuance to TUGCO.

This document is the Final Environmental Impact Statement (EIS). Since responses to comments received on the Draft EIS did not require significant changes in data or analyses, the Draft EIS was not reprinted in full. This Final EIS incorporates the Draft EIS by reference and identifies all written and oral comments received during public review, the responses to those comments, and additions and corrections to the Draft EIS text resulting from public review. The Draft EIS and this Final EIS together, constitute the complete Final Environmental Impact Statement.

The Final EIS contains four parts: a summary which presents the major conclusions of the Draft and Final EIS (Part I); a listing of and responses to comments on the Draft EIS (Part II); revisions to the Draft EIS (Part III); and a discussion of EPA's preferred action (Part IV). A copy of the Draft EIS is available for review in the EPA Regional Office or one can be obtained at cost from the National Technical Information Service, US Department of Commerce, Springfield, Virginia 22161.

Both the Draft EIS and Final EIS were prepared with the assistance of WAPORA, Inc. A list of persons involved in the preparation of the two documents is presented in Chapter 8 of the Draft EIS.

PART I. SUMMARY OF DRAFT AND FINAL EIS'S

A. EXISTING SITUATION

Texas Power and Light Company (TP&L) and the Aluminum Company of America (ALCOA) have initiated construction and propose operation of the Twin Oak Steam Electric Station (TOSES) in Robertson County, Texas. The generating facility has been designed and will be constructed by Texas Utilities Services, Inc. (TUSI). TUGCO will operate the station when completed. The TOSES will consist of two 750 megawatt (MW) steam electric generating units, lignite handling facilities, a rail spur, switchyard and transmission lines. In addition, a dam and cooling reservoir will be located on Duck Creek. A pipeline from Lake Limestone on the Navasota River will supply make-up water for the cooling reservoir.

The status of the ongoing construction of the proposed TOSES currently is as follows:

Construction Phase	Amount Complete
Dam and reservoir	95%
Make-up water pipeline	90%
Freight railroad spur	100%
Plant site grading	100%

Overall construction of the proposed TOSES is less than 10% complete. Acreages affected by construction activities include the following:

AREA	ACRES DISTURBED	ACRES REVEGETATED	ACRES PERMANENTLY REMOVED
Plant Island	250	180	70
Dam	206	200	6
Disposal Areas	140	70	70
Freight Railroad	550	480	70
Make-up Water Pipeline	125	122	3
Dragline Erection Pad	16	6	10
TOTAL	1,287	1,058	229

Twin Oak Reservoir will be filled about one year prior to plant start-up. At that time it will occupy 2,330 acres. About 800 acres in the reservoir basin have been cleared of large timber; however, this area remains vegetated with grass and shrub species. Approximately 300 acres are currently under water.

Development of the TOSES came in response to projected annual increases in demand within the Texas Utilities System service area and the national objective to reduce dependence on oil and natural gas for boiler fuels by increasing the use of resources such as lignite, coal, or nuclear fuel.

Wastewaters generated by the proposed TOSES facility will be collected, treated, and discharged via nine discharge pipes. Prior to discharge of a pollutant to navigable waters of the United States by a new source (as defined in Section 306 of the Clean Water Act) in an industrial category where performance standards are proposed, a NPDES permit must be obtained from EPA. Because EPA determined the issuance of such a permit to represent a major Federal action with potential significant impacts, EPA prepared Draft and Final EIS's in accordance with the requirements of the National Environmental Policy Act (NEPA).

B. PROJECT ALTERNATIVES

The alternatives assessed by the permit applicant included the no action alternative; alternative power sources and generating methods; alternative power plant sites; power plant design alternatives; and transmission line alternatives. Texas Utilities determined that implementation of the no action alternative would result in failure to meet projected electrical energy demands in its service area.

All alternative methods of acquiring power such as purchasing power from other sources, reactivating retired power plants, upgrading older plants, and reducing load growth were considered by the Applicant to be too costly or non-responsive to need. Solid fossil fuel was the only alternative fuel or energy source evaluated that was considered to be both technically and economically feasible.

Alternative components regarding power plant design which were evaluated included the condenser cooling water system, boiler make-up water intake systems (including surface and groundwater systems), plant discharge systems, liquid waste management systems, solid waste management systems, and air quality control systems.

Additionally, alternative steam electric sites were considered by weighing factors such as fuel transportation costs, water availability, land availability, and environmental compatability. Transmission system options evaluated by TUGCO included various corridor locations and alternative routes within the corridors, and evaluations of above-ground versus underground facilities. Above-ground facilities were selected for implementation.

C. COMMENTS ON DRAFT EIS

EPA distributed the Draft EIS in September 1982. On 9 November 1982, EPA held a public hearing on the Draft EIS to receive any verbal or written comments. Only two persons spoke at the public hearing. Their comments and EPA's responses are contained in Part II of this Final EIS. Concerns expressed included the cumulative effect of lignite fired power plants on regional air quality, the socio-economic impacts of the project on nearby communities, the lack of a detailed soil survey, and acid precipitation.

Written letters have been received from several governmental agencies including the US Department of Interior, the Department of HUD, the Soil Conservation Service, the Department of Health and Human Services, and the US Army Corps of Engineers. Numerous letters have also been received from area business and civic leaders. All comment letters along with EPA's responses, if appropriate, are included in Part II of this Final EIS.

D. EPA'S PREFERRED ALTERNATIVE

The alternatives evaluated by EPA included (1) the issuance of a new source NPDES permit to TUGCO for the proposed TOSES and (2) denial of the NPDES permit. Conditional requirements or provisions may be added to the permit, if necessary, to mitigate adverse environmental impact.

Based on a review of the comments received on the Draft EIS, EPA has determined its preferred action to be the issuance of a new source NPDES permit to TUGCO for the proposed Twin Oak Station. Most of the adverse effects associated with the project are considered minor. However, the more notable adverse effects include: increased soil erosion, changes in local stratigraphy and potential loss of prime farmlands; localized lowering of groundwater levels and minor degradation of groundwater quality; increased levels of suspended materials in area streams; increased levels of emissions (i.e., particulates, SO_2 and NO_x) and fugitive dust; a long-term conversion of riparian and forestlands to pasture, and associated loss of wildlife habitat; and increased stress on housing and community services. The most positive effects from the project will be a stimulation in area economy brought about by increased job opportunities and revenues.

EPA's draft NPDES permit is included as the Appendix of this Final EIS. A few comments were received during review of the Draft EIS and as a result, changes have been made to the permit (see Part III) since issuance of the Draft EIS. Shortly after, or concurrent with EPA's filing of this Final EIS with the EPA Office of Federal Activities, the draft NPDES permit for wastewater discharge from the Twin Oak Steam Electric Station will go to public notice. EPA's final decision regarding permit issuance will not be made until after expiration of the 30-day review period on the Final EIS and expiration of the 30-day public notice period on the permit. Any additional comments received during these 30-day periods will be considered prior to a final decision being made.

PART II. CONSULTATION AND COORDINATION

This section of the Final EIS contains the verbal and written comments received on the Draft EIS as well as EPA's responses to these comments.

A. COMMENTS ON THE DRAFT EIS

1. Public Hearing

On 9 November 1982, EPA held a public hearing in Franklin, Texas for the purpose of receiving public comments on the Twin Oak Draft EIS and draft NPDES permit. Approximately 35 persons attended the meeting including representatives of EPA, their consultant, representatives of TUGCO and TUSI, and several interested citizens. The panel presenting formal statements and the subject of their presentations were as follows:

PERSON	TOPIC OF STATEMENT
Mr. Patrick Hudson Presiding Officer EPA Region 6	Introductory Remarks; Rules of Procedure EPA
Ms. Darlene Owsley Environmental Specialist EIS Preparation Section EPA Region 6	Environmental Impact Statement and Public Participation

Following the formal statements, comments and questions were solicited from the audience. Of the approximately 35 persons in attendance at the public hearing, only two persons from the audience made statements. Their comments and EPA's responses are contained in Section B.

2. Written Comments

The Draft EIS on the Twin Oak Project was distributed by EPA in September 1982. The period for receiving written comments on the Draft EIS was extended by EPA from 15 November 1982 until 29 November 1982. EPA received 23 written letters from several Federal and State agencies, public interest groups, and private citizens. These comment letters and EPA's responses are contained in Section B.

B. RESPONSES TO COMMENTS

1. Public Hearing

Dr. Lewis Varvel of Hearne, Texas expressed concern about cumulative air quality impacts due to other lignite projects in the area. He also asked the source of water supply for the TOSES and whether downstream water rights on Duck Creek would be honored and how.

EPA Responses: Cumulative air quality impacts are considered by EPA in their issuance of Prevention of Significant Deterioration (PSD) permits. PSD regulations are designed to limit the deterioration of air quality in attainment areas from emissions of SO_2 and particulates. Since both the National Ambient Air Quality Standards (NAAQS) and PSD Class II increments should be met by proposed projects in the region, cumulative air quality impacts are expected to be insignificant. Water needed for construction and operation of TOSES will come primarily from the Twin Oak Reservoir. Make-up water to fill or supplement the reservoir will be pumped from Lake Limestone. Additionally, some groundwater may be used for potable water and boiler feed water. With regard to water rights, the project is utilizing water according to allocations and within limitations and constraints established by the Brazos River Authority and the Texas Department of Water Resources. To meet downstream water rights, the state water rights permit calls for a flow of at least 15-acre-feet per month into Duck Creek below the cooling reservoir.

Mr. Michael D. Brooks submitted his comments in writing as well as presented them orally at the public hearing. His comments and EPA's responses are contained in the next section.

2. Written Comments

The following list has been prepared to key the reader to the origin of comments received on the Draft EIS. The comments and EPA's responses are contained on the following pages.

LIST OF COMMENTORS ON THE TWIN OAK DRAFT EIS

Letter/ Comment No.	Date of Comment	Agency, Organization, or Individual	Page No.
1	13 October 1981	James M. Moore - Engineer, Texas State Soil and Water Conservation Board	II-5
2	22 October 1982	Roger R. Wallis - Deputy Director, Standards and Regulations Program, Texas Air Control Board	II-6
3	25 October 1982	Marcus L. Yancey, Jr. - Deputy Engineer Director, State Department of Highways and Public Transportation	II-7
4	26 October 1982	John C. Hicks - President, First National Bank, Franklin, Texas	II-8
5	26 October 1982	Joe L. Hedrick - Superintendent, Franklin Public Schools	II-9
6	28 October 1982	Joe Ainsworth - President, Bremond Chamber of Commerce	II-10

LIST OF COMMENTORS ON THE TWIN OAK DRAFT EIS (Continued)

Letter/ Comment No.	Date of Comment	Agency, Organization, or Individual	Page No.
7	28 October 1982	Pryse Metcalfe - Mayor, Franklin, Texas	II-11
8	28 October 1982	Thomas E. Phillips - Principal, Franklin Public Schools	II-12
9	28 October 1982	L. M. Hawkins, Jr. Chief Office of Operation Branch - Army Corps of Engineers	II-13
10	01 November 1982	Bobby E. Sullivan - Concerned Citizen	II-15
11	01 November 1982	Billy Lee Stellbauer - Mayor, Bremond, Texas	II-16
12	No Date	Robert Beilamoweiz - Bremond Resident	II-17
13	03 November 1982	George C. Marks - State Conservationist, Soil Conservation Service	II-18
14	04 November 1982	Nester L. Leamon - President, Franklin Lion's Club	II-20
15	08 November 1982	Harvey Davis - Executive Director, Texas Department of Water Resources	II-21
16	09 November 1982	Michael D. Brooks - Brazos Valley Development Council	II-22
17	10 November 1982	Frank S. Lisella - Chief Environmental Affairs Group, US Department of Health and Human Services, Atlanta, Georgia	II-24
18	22 November 1982	David M. Cochran - Assoc. Comm. For Environmental and Consumer Health Protection, Texas Department of Health	II-25
19	29 November 1982	Bruce Blanchard - Director Environmental Project Review, USDI Office of the Secretary, Washington DC	II-27
20	30 November 1982	Victor J. Hancock - Environmental Clearance Officer, US Department of Housing and Urban Development	II-30

LIST OF COMMENTORS ON THE TWIN OAK DRAFT EIS (Concluded)

Letter/ Comment No.	Date of Comment	Agency, Organization, or Individual	Page No.
21	01 December 1982	William C. Hamilton - Manager General Government Section Texas Budget and Planning Office	II-31
22	No Date	John E. Hutchinson - Consultant Texas Department of Agriculture	II-32
23	06 December 1982	Glenn J. Cook - Executive Director, Brazos Valley Development Council	II-33

TEXAS STATE SOIL AND WATER CONSERVATION BOARD

1002 First National Building
P. O. Box 658
Temple, Texas 76503
Area Code 817 773-2250

October 13, 1982

Dr. Jarvis E. Miller, Director
Governor's Budget and Planning Office
Section Attention: General Government
P.O. Box 13561
Austin, TX 78711

Dear Dr. Miller:

1 We have reviewed the draft environmental statement for the Twin Oak Steam Electric Station NPDES permit (EIS #2-09-50-014). We offer no comment on the statement at this time.

Sincerely yours,

James M. Moore
Engineer

JMM/vd

II-5

Response to Comments From James M. Moore

1. The "no comment" reply is noted.

TEXAS AIR CONTROL BOARD

6330 HWY 290 EAST
AUSTIN TEXAS 78723
512/451-5711

JOHN L. BLAIR
Chairman
CHARLES R. JAYNES
Vice Chairman

BILL STEWART, P.E.
Executive Director

VITTORIO K. ARGENTO, P.E.
BOB G. BAILEY
FRED HARTMAN
D. JACK KILIAN, M.D.
OTTO R. KUNZE, PH.D., P.E.
FRANK H. LEWIS
R. HAL MOORMAN

October 22, 1982

Mr. Jarvis Miller, Director
Governor's Budget and Planning Office
Attention: General Government Section
P. O. Box 13561
Austin, Texas 78711

Subject: Draft Environmental Impact Statement for the Proposed Twin Oak Steam Electric Station, Robertson County, Texas
EIS Number 2-09-50-014

Dear Mr. Miller:

1 Our records indicate that all necessary Texas Air Control Board permits have been applied for and granted for the proposed Twin Oak Steam Electric Station.

The project, as described, is consistent with the Texas Air Control Implementation Plan.

Thank you for the opportunity to review this document. If we can be of further assistance, please contact me.

Sincerely,

Roger R. Wallis, Deputy Director
Standards and Regulations Program

cc: Mr. Eugene Fulton, Regional Supervisor, Waco

9-11

Response to Comments From Roger R. Wallis

1. Comments noted.

COMMISSION
ROBERT H. DEDMAN, CHAIRMAN
A. SAM WALDROP
JOHN R. BUTLER, JR.

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
DEWITT C. GREER STATE HIGHWAY BLDG.
AUSTIN, TEXAS 78701

ENGINEER DIRECTOR
MARK G. GOODE

October 25, 1982

IN REPLY REFER TO
FILE NO.
D8-E 854

Twin Oak Steam Electric Station
Robertson County

Mr. Jarvis E. Miller, Director
Governor's Budget & Planning Office
Sam Houston Building
Austin, Texas

Dear Mr. Miller:

II-7
1

We have reviewed the draft environmental impact statement covering the Twin Oak Steam Electric Station in Robertson County as requested by your memorandum of September 30, 1982.

The Department has no comment regarding the effect of the project on the State Highway System.

Sincerely yours.

M. G. Goode
Engineer-Director

By: Marcus L. Yancey Jr.
Marcus L. Yancey, Jr.
Deputy Engineer-Director

Response to Comments From Marcel L. Yancey, Jr.

1. The "no comments" reply is noted.

FNB

THE FIRST NATIONAL BANK

RECEIVED
OCT 27 1982
6 ES

JOHN C. HICKS
PRESIDENT

October 26, 1982

Mr. Clinton B. Spotts
U. S. Environmental Protection Agency
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

This letter shall serve to register my support for the construction and operation of the Twin Oak Steam Electric Station and Mine.

I believe the project will be a great benefit to our community and county. Your draft environmental impact statement identifies many of these benefits and environmental impacts. In my opinion these benefits more than offset the environmental impacts. The Environmental Impact Statement assures us all the alternatives have been considered and that the fine record established by the Company at other projects will continue at the Twin Oak Station.

I fully agree with the Agency's determination to issue a NPDES Permit.

Sincerely,

John C. Hicks

John C. Hicks

cc: Bob Landrum

II-8

1

Response to Comments From John C. Hicks

1. Comments noted.

Franklin Public Schools
Franklin, Texas 77856

October 26, 1982

RECEIVED
NOV 1 1982
6 ES

Mr. Clinton B. Spotts
V. S. Environmental Protection
Agency, Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

Thank you for the copy of the draft EIS for the Twin Oak Steam Electric Station in Robertson County.

We appreciate the fact that you have examined the plant's operational impact and the impact of the mining operations. It is my understanding that the Texas Railroad Commission will consider in detail the mining procedures to minimize the environmental impact at the time of the company's application for a surface mining permit. Your EIS and the action of the Railroad Commission should provide adequate protection to the environment from the effects of the project. 1

This project will be a great asset to our local area. I recommend that you complete the EIS and issue the company a discharge permit.

Sincerely yours,

Joe L. Hedrick

Joe L. Hedrick
Superintendent

JLH/kb

6-II-9

Response to Comments From Joe L. Hedrick

1. Comments noted.

CHAMBER OF COMMERCE
BREMOND, TEXAS
76629

October 24, 1982

RECEIVED
NOV 1 1982
6 ES

Mr. Clinton F. Spotts
U. S. Enviromental Protection Agency
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts,

I would like to express my opinion on your decision to permit the operation of the Twin Oak Steam Electric Plant to be built near Bremond, Texas. As a resident and merchant of this area, I am deeply concerned with both environmental protection and economic development of it.

1 I have personally made trips to areas where these people have extensive operations of this type and made numerous inquiries and personal research. It appears to me that they have done their work well. I feel the economic benefits of this operation far outweigh any minor damage that may occur.

To be precise, I welcome the addition of this plant to our area and approve of your decision to issue a permit for same. Thank you for your time.

Sincerely,

Joe Ainsworth
President

JAA/smp

II-10

Response to Comments From Joe Ainsworth

1. Comments noted.

City of Franklin

A General Law City

FRANKLIN, TEXAS 77856

P. O. Box 428 (713) 828-3321

October 28, 1982

RECEIVED
NOV 1 1982
6 ES

Mr. Clinton B Spotts
U.S. Environmental Protection Agency, Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

This is in response to the public notice of September 2, 1982, that invited comments on the EIS for Twin Oak Project in Robertson County, Texas.

I think that EPA has done a good job in collecting Project information and identifying beneficial, as well as possible adverse, effects of the Twin Oak Project. The EIS will serve as a useful reference for local officials in Robertson County and in communities near the plant.

I am looking forward to having Texas Utilities as a member of my community and urge that EPA complete its environmental review so that the construction and operation of Twin Oak plant can proceed.

Sincerely,

Pryse Metcalfe
Mayor

PM/nm

II-11

1

Response to Comments From Pryse Metcalfe

1. Comments noted.

Franklin Public Schools
Franklin, Texas 77856

October 28, 1982

RECEIVED
NOV 1 1982
6 ES

Mr. Clinton B. Spotts
U. S. Environmental Protection
Agency, Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

I have had the opportunity to review the draft EIS for the Twin Oak Steam Electric Station in Robertson County.

I appreciate that you and your agency have taken the time to examine the plant's environmental impact on our local environment. It appears that the EIS and the Railroad Commission will provide adequate environmental protection for our area. The people in Robertson County appreciate this. 1

The Twin Oak project will provide many benefits to our area and with this in mind, I encourage you to complete the EIS and issue the company a discharge permit.

Sincerely yours,

Thomas E. Phillips
Principal

TEP/kb

II-12

Response to Comments From Thomas E. Phillips

1. Comments noted.

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102

SWFOD-O

28 October 1982

RECEIVED
OCT 29 1982
6 ES

Mr. Clinton B. Spotts
Regional EIS Coordinator
U.S. Environmental Protection Agency
Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

My staff has completed its review of the Draft Environmental Impact Statement (DEIS) for the Twin Oak Steam Electric Station. The following comments address specific sections of the DEIS.

3.3: Table 3.1 is erroneous with respect to the status of Corps of Engineers permits. Please change to read as follows:

1

AGENCY	PERMIT TYPE	PERMIT NUMBER	STATUS
COE	Section 404	W-N-443-41-PERMIT-141 (Pump Station)	Issued 4/18/78
COE	Section 404	Nationwide General Permit (SES and related structures)	Reviewed 7/15/81

6.3.3.2: Paragraph 3 of this section should be placed in Section 3.3 and changed to the following:

2

The U.S. Army Corps of Engineers regulates the discharge of dredged and fill material into the waters of the United States under authority of Section 404 of the Clean Water Act (Public Law 95-217, dated 27 December 1977). A general permit has been issued on a nationwide basis for the placement of dredged and fill material into certain waters of the United States. These include: nontidal rivers, streams, and their impoundments, including their adjacent wetlands all of which are located above the headwaters of the stream. Headwaters is defined as that point on a nontidal stream above which the average annual flow is less than five cubic feet per second. This permit also authorizes discharges into other nontidal waters of the United States that are not part of a surface tributary system to interstate waters or navigable waters of the United States.

III-13

Responses to Comments From L.M. Hawkins, Jr.

1. Table 3-1 has been corrected to reflect updated information (see page III-13 of this Final EIS).

2. Paragraph 3 was placed in Section 3.3 and changed as requested (see pages III-11 and III-12 of this Final EIS).

SWFOD-O
Mr. Clinton B. Spotts

28 October 1982

The pumping station for the make-up water pipeline was authorized by the Corps of Engineers as part of the Sterling C. Robertson Dam (Lake Limestone), under permit number W-N-443-41-PERMIT-141, issued 18 April 1978.

By letter dated 15 July 1981, the Corps of Engineers stated that the TOSES and its related structures (surface lignite mines, cooling reservoir, rail spurs and water make-up line) would result in discharges above the headwaters of various streams, and therefore is authorized under a nationwide general permit.

2

Because pre-existing support towers were utilized for that segment of the proposed transmission line which crosses Lake Limestone, there were no discharges of fill material, and therefore no permit was required under Section 404. The Corps of Engineers has determined that any stream crossings by remaining proposed transmission lines will occur above the headwaters of those streams, and therefore will be authorized under a nationwide general permit for any discharges incidental to their construction.

3

6.6.3.1: On page 6-97 it states that an 8,600 acre fenced buffer zone around the Twin Oak Station will be created. On page 1-7 of Section 1.5 this fenced area is given as 10,500 acres.

Thank you for the opportunity to comment on this project. If you have further questions concerning this letter, please contact Ms. Marianna Heins at 817-334-4625.

Sincerely,

L. M. HAWKINS, JR.
Chief, Office Operations Branch

Copy furnished:
SWFED-PR

II-14

Responses to Comments From L.M. Hawkins, Jr. (concluded)

3. Page 1-7 has been changed by errata to reflect 8,600 acres (see #3, page III-1 of this Final EIS).

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6 ES

November 1, 1982

Mr. Clinton B. Spotts
U.S. Environmental Protection Agency, Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

Thank you for the opportunity to read and comment on your EIS for the Twin Oak Plant.

II-15

1 I have been following the development of this project since 1974 and your action in preparing the EIS and issuing a discharge permit in the near future is appreciated. Your timely and comprehensive environmental evaluation does not indicate any major obstacle to the construction and operation of the plant. On balance the social and economic benefits appear to outweigh the minor environmental impacts.

I urge the completion of the EIS and the issuance of a discharge permit.

Very truly yours,

Bobby E. Sullivan

Bobby E. Sullivan

Response to Comments From Bobby E. Sullivan

1. Comments noted.

A & B MOTORS

Box 156 / BREMOND, TEXAS 76629 / (817) 746-7601

November 1, 1982

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NOV 3 1982
6 ES

Mr. Clinton B Spotts
U. S. Environmental Protection Agency
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts,

I have reviewed the Environmental Impact Statement (ERIS) for the proposed Twin Oak Steam Electric Station (TOSES) which was prepared in connection with the National Pollutant Discharge Elimination System (NPDES) permitting determination for the station. I have noted that you plan to issue the permit and would like to comment on this decision.

1 It is apparent to me that EPA has made the correct decision in this matter. The EIS is a very detailed study that, on balance, reveals few serious problems with the plant, but many substantial benefits at the local and regional level. The efforts to protect the environment that are being undertaken by the applicants seem more than adequate and reflect a true sense of commitment in this area of operations.

As a businessman and also as Mayor of the City of Bremond I feel that this plant will have a positive economic impact on this area that is badly needed and I strongly approve of your plans to issue the permit. Thank you for this opportunity to comment on your decision.

Very Truly Yours,

Billy Lee Stellbauer

Billy Lee Stellbauer

II-16

Response to Comments From Billy Lee Stellbauer

1. Comments noted.

Mr. Clinton B. Spotts
U.S. Environmental Protection Agency
1201 Elm Street
Dallas, Texas 75270

RECEIVED
NOV 3 1982
6 ES

Dear Mr. Spotts:

I am writing you to voice my opinion on your decision to permit the operation of the Twin Oak Steam Electric Station, to be built near Franklin, Texas. As a resident of this area, I am anxious to see both economic development and environmental protection of it.

1 It is apparent to me that the owners of Twin Oak have done their homework on this project and should be allowed to go ahead with it. These people have a lot of successful experience with the mining and utilization of lignite for electricity generation. The economic benefits of such a cautious operation will far outweigh any minor environmental damage that might occur. In short, I approve of your decision to issue a permit and welcome the addition of this plant to our area.

Thank you for this opportunity to voice my opinion.

Robert Beilamoweiz
P.O. Box 513
Bremond, Texas 76629

II-17

Response to Comments From Robert Beilamoweiz

1. Comments noted.

United States Department of Agriculture

Soil Conservation Service

P. O. Box 646
Temple, TX
76503

November 3, 1982

Mr. Clinton B. Spotts
Regional EIS Coordinator
U.S. Environmental Protection Agency
1201 Elm Street
Dallas, TX 75270

Dear Mr. Spotts:

We have reviewed the draft environmental impact statement concerning issuance of a new source National Pollutant Discharge Elimination System (NPDES) permit for wastewater discharge from the Twin Oak Steam Electric Station (TOSES) in Robertson County, Texas.

While we do not have specific comments on the TOSES, the following comments pertain to the overall project which includes the TOSES and associated facilities and the mine.

1 1. Site specific soil mapping is not available. While general soil maps can provide general guidance in planning for and interpreting soil data, specific items cannot be fully addressed (prime farmland, specific reclamation needs on disturbed areas, etc.). To fully evaluate soil resources and the project impact, site specific soil mapping is needed. We specifically need this information to comment on prime farmland and the impact on land use conversion.

2 2. The conversion of grassland and grassland forest to predominantly pastureland may have adverse impacts. The existing land use is agricultural land (67 percent), forest (26 percent), and rangeland (6 percent). As the forest is used as grazing land, the land use should be considered rangeland (land where the vegetation is predominantly native and is managed for grazing). The change from this diversified plant community to pastureland (adapted domestic forage plants) will change techniques normally used by landowners to maintain production.

3 3. The uncertainty of the degree of maintenance required to sustain production of reclaimed lands may adversely affect the long-term productivity. This is especially critical if revegetation consists of primarily pastureland where inputs of fertilizer, water, lime, etc., may be necessary in greater amounts than can economically be applied.

4 4. Following reclamation, typical management may need to be altered due to disturbance of the soil to maintain erosion control and sustain production. If a higher management level is needed and not carried out, this would be an adverse impact of the project.

The Soil Conservation Service

Response to Comments From George C. Marks

1. It is correct that site specific soil mapping is not available. Since the Twin Oak mine has been determined an existing source and EPA's NPDES permit for the mine has been issued effective May 10, 1982, further action by EPA is not appropriate. Site specific soil information should be furnished by TUGCO in their surface mining permit application to the Texas Railroad Commission.

2. Comments noted.

3. Comments noted.

4. Comments noted.

5. Table 6-3 indicates both Axtell and Padina soils have low potential for rangeland, yet have a medium potential for pastureland. While these soils have some limitations regardless of land use, I question that they have limitations difficult or costly to overcome. The establishment of native plants (while slower than pasture species) and management does not require the costly inputs of fertilizer, lime, etc. Under a rangeland setting, these soils can be productive with medium limitations and proper techniques in management. 5

6. Of the 1,287 acres disturbed for the TOSES, 1,058 acres have been or will be revegetated. Much of this will involve slopes, waterflow areas, and other disturbances. These critical sites will require specific management needs which, if not implemented, could adversely affect the environment and water quality. 6

Sincerely,

George C. Marks

GEORGE C. MARKS
State Conservationist

cc: Mike McGuire, Area Conservationist, SCS, Bryan, TX

Response to Comments From George C. Marks (concluded)

5. Comments noted.

6. Comments noted.

Franklin
LIONS CLUB

FRANKLIN, TEXAS 77856

November 4, 1982

NOV 9 1982

Mr. Clinton B. Spotts
Regional EIS Coordinator
U. S. Environmental Protection Agency, Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

The purpose of this letter is to voice my support for the Twin Oak project now under construction near Franklin, Texas. My review of the draft EIS did not reveal that this project would cause serious harm to my family or community. The project as described in the draft EIS would appear to benefit many of us that live here.

Thank you for this opportunity to support this project.

II-20 1

Nester L. Leamon, President
P. O. Box 555
Franklin, Texas 77856

Response to Comments From Nester L. Leamon

1. Comments noted.

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

TEXAS WATER DEVELOPMENT BOARD
Louis A. "Joe" Pilgrim
Louie Welch

Harvey Davis
Executive Director

TEXAS WATER COMMISSION
Lee B. M. Biggart, Chairman
Felix McDonald
John D. Stover

November 8, 1982

Dr. Jarvis Miller, Director
Governor's Budget and Planning Office
Sam Houston Building, 7th Floor
Austin, Texas 78711

Dear Dr. Miller:

Subject: Environmental Protection Agency (EPA) -- Draft Environmental Impact Statement (DEIS): TWIN OAK STEAM ELECTRIC STATION (TOSES), ROBERTSON COUNTY, TEXAS -- September 2, 1982. (State File Reference: EIS-2-09-50-014).

In response to your September 30 memorandum, the Texas Department of Water Resources (TDWR) offers the following staff review comments on the subject DEIS relative to EPA's proposed issuance of a National Pollutant Discharge Elimination System (NPDES) permit to the Texas Utilities Generating Company (TUGCO) for future wastewater discharges from the TOSES facility, now under construction:

1. The DEIS adequately discusses and considers the specific topics suggested in TDWR's letter of August 25, 1981, in response to EPA's public notice of intent dated July 2, 1981, relative to the proposed preparation of a DEIS for the TOSES project.

2. TDWR already has issued to TUGCO the following necessary permits and certifications, pursuant to TDWR's statutory regulatory authority:

Permit Type	TDWR Permit No.	Date Issued
Dam Construction Permit	2958	October 8, 1974
Water Rights Contract	CP-255	October 8, 1974
Waste Control Order	01986	February 25, 1976
Solid Wastes Disposal Facilities Registration	32043	June 11, 1982

3. TDWR recommends that EPA issue to TUGCO the proposed NPDES permit, shown in Appendix C of the DEIS, which we find to be consistent with the permits, certifications, and registrations already issued by TDWR to TUGCO.

Sincerely yours,

Seth Burnett for
Harvey Davis
Executive Director

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Budget/Planning

11-21

1

Response to Comments From Harvey Davis

1. Comments noted.

Comments during the public hearing from Michael D. Brooks

Substantial Problems with TOSES Draft EIS

1 1.) Very incomplete and possibly outdated justification of need of and alternative fuel sources for power plant (both types of fuel and its location) and support facilities, justification contradicts summary.

See P1-4, 4-2, 4-3, 5-2, 5-4 to 5-7, 5-11, 5-12, 6-55, 6-56.

2 2.) Very incomplete and contradictory data concerning number of acres to be disturbed at any one time, total number of acres to be mined, and how it is to be brought back to "a land cover condition that is as good as or better than that which preceded mining". (P6-106)

See P1-4, 1-9, 5-51, 5-52, 6-16, 6-46, 6-50, 6-52, 6-91, 6-103, 6-104, 6-106, 6-107, 6-146.

3 3.) Effective information showing that a detailed soil survey should have already been completed, or should be done. Yet, none has been produced to date.

See P6-4, 6-8, 6-9, 6-14, 6-16, 6-17, 6-19, 6-22, 6-146.

4 4.) Questionable results/justification in acquisition of certain permits and classifications.

See P3-6, 5-32, 5-58, 6-38, 6-42, 6-48, 6-49, 6-51.

5 5.) Very inadequate information concerning pollution and other environmental results of surface lignite mining is presented for public review. This is an obvious omission in light of mining operations being run by other organizations in the past.

See P5-32, 5-49, 6-6, 6-30, 6-31, 6-49, 6-53, 6-69, 6-70, 6-74, 6-101, 6-102, 6-105, 6-128, 6-129, etc.

6 6.) Inadequate justification for expansion of project area in section 6.8 (Socioeconomic) from a 30 to 50 mile radius. Inadequate guarantees that construction and operational personnel will reside in cities and towns indicated.

See P5-1, 5-39, 6-61 to 6-63, 6-94, 6-128, 6-139.

7 7.) Acid precipitation problems documented by the Texas Energy and Natural Resources Advisory Council, Plan to Evaluate Acid Deposition Issues in State of Texas, V. 1 and Technical Summary and Perspective, V. 2, January, 1982, are ignored by the preparers of the TOSES draft EIS published at least eight months later. The above mentioned reports are specific to Texas.

See P6-53, 6-58, 6-71, etc. See also TENRAC.

8 8.) Inadequate analysis of cumulative effects of lignite plants in the area. Not all plants mentioned in the text are used for analysis, much less all the plants known by EPA to be in some stage of the approval to construction process. Several instances of impact of Twin Oak Generating Plant not being added to impact of mining operation for overall effect.

See P4-3 to 4-5, 5-2, 6-64, 6-66, 6-170 to 6-172, Sections 6.4.3, 6.5.3, 6.10.3, 6.11.3.

Responses to Comments From Michael D. Brooks

1. Upon issuance of a Certificate of Convenience and Necessity by the Public Utility Commission of Texas, TUSI commenced construction of TOSES on 8/30/76. As part of project development, all viably economical forms of fuel were considered for use (See Draft EIS pages 5-4 through 5-7). Texas lignite was selected for use due to environmental acceptability, economics, and availability of state-of-the-art technology.

2. All references to the number of acres to be disturbed annually during mining should consistently be 950 acres throughout the text. It should be recognized that this 950 acre figure is an average annual figure. Actual acres disturbed annually will vary with terrain, depth of lignite, weather, etc. About 33,000 acres lie within the Twin Oak mining areas. Site specific plans for reclamation of disturbed mining lands will be submitted by TUGCO to the TRC prior to mining.

3. A detailed soils survey will be completed by TUGCO prior to submission of a Surface Mining Control and Reclamation Permit application to the TRC for each five year mining area. The TRC will make determinations regarding prime farmland soils at that time.

4. Please refer to Table 3-1 on page III-13 of this Final EIS. All permits or certifications acquired for the TO Project to date are required as part of the environmental review process required by both state and Federal regulations. Twin Oak Station and Mine cannot be constructed or operated prior to acquisition of these permits. Excepting an NPDES permit required by EPA and a Surface Mining Permit required by the TRC, all permits, approvals and certifications have been acquired by TU for the TOSES.

5. The Draft EIS and Final EIS primarily address the impacts associated with construction and operation of the TOSES. Twin Oak mine was declared an "Existing Source" by EPA on 9/26/79 and is not subject to environmental review under the National Environmental Policy Act. The primary environmental review responsibilities for Twin Oak Mine will be conducted under the Texas SMCRA administered by the TRC.

6. Socioeconomic effects from major projects are not restricted to predetermined distances (i.e., 30 miles) from the project. Rather the size, facilities, and area of surrounding communities/towns determine and influence effects. The availability of good roads into the project or site is also important. As stated in the errata section (see #98, page III-7 of this Final EIS), The socioeconomic analysis is based on research done by Mountain West.

7. Although TENRAC has undertaken an ambitious program to determine the possible occurrence and assess the potential impacts of acid precipitation/deposition in Texas, the studies are largely incomplete and thus, inclusive at this time (see Draft EIS page 6-71). Previous to these studies, the TACB collected data from four towns in eastern Texas. These data are presented in the text (see Draft EIS Table 6-14, page 6-54).

8. Two power plants now being planned by Phillips Coal Company in Robertson County were unknown to EPA during preparation of the Twin Oak Project EIS. These two plants have been identified by errata on page III-8 of this Final EIS. The cumulative development discussion contained in Section 6.18 of the Draft EIS remains unchanged.

9. Instances of contradictions within the text (see P1-5, 1-7, 3-5, 5-16, 5-37 to 5-39, 5-53, 5-57, 6-19, 6-15, 6-47, 6-52, 6-98, 6-105, 6-107, 6-110, 6-112, 6-128, 6-139, 6-154), incomplete or incorrect data or statements (see P4-3, 4-4, 5-14, 5-52, 6-10, 6-58, 6-63, 6-64, 6-66, 6-68, 6-85, 6-87, 6-88, 6-91, 6-92, 6-93, 6-144, 6-155, 6-158, 6-165, 6-171, 6-172), and old, most probably out of date data (see P6-27, 6-28, 6-62, 6-63, 6-66, 6-177 to 6-119, 6-121, 6-123, 6-125 to 6-127, 6-143, 6-155 to 6-159).

10. Very inadequate analysis of amount and cost of electrical power to actually reach consumer versus amount of energy and goods consumed by building, operation, reclamation, inherient inefficiency, transmission loss, etc., during the life of the plant

See P1-3, 1-4, 1-6, 1-9, 4-2, 4-6, 5-48 to 51, 5-57, 6-14, 6-16, 6-46, 6-50, 6-52, 6-78, 6-80, 6-136 to 138, 6-165, 6-166, Sections 6.2, 6.6, 6.9, 6.11, 6.13.

Responses to Comments From Michael D. Brooks (concluded)

9. Comments unclear.

10. Based on current system assumptions and system studies, TUGCO has estimated that the Twin Oak Generating Station should provide approximately 6,800,000 Mwh annually to the Texas Utilities Company System when fully operational. TUGCO expects the lignite fuel expense at Twin Oak for this output level to be approximately $270 million, or a cost of about 4 cents per kwh. The cost of operation and maintenance at the plant is expected to be about $90 million, or about 1.3 cents per kwh.

Power and energy from the plant will be delivered to load centers by way of high voltage transmission lines. Transmission losses are low, usually on the order of 3% to 4% or less. In the load centers, the costs which are applicable are no longer Twin Oak costs, but rather the composite of costs for ownership and operation of all system plants. TUGCO expects Twin Oak, with its lignite fuel source, to produce energy more economically than plants which utilize natural gas as fuel.

(404) 452-4095
November 10, 1982

Mr. Clinton B. Spotts
Regional EIS Coordinator
U.S. Environmental Protection Agency
Region VI
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

We have reviewed the Draft Environmental Impact Statement (EIS) for Twin Oak Steam Electric Station, Robertson County, Texas. We are responding on behalf of the Public Health Service.

1 The Draft EIS does not address mosquito or other vector populations. The Final EIS should discuss the effects of the proposed action on mosquito or other vector populations, their potential health threats to workers, proposed control measures that may be used, kinds and volumes of pesticides that may be applied, and anticipated application procedures. This discussion should include the 2,330 acre cooling reservoir, the hot pond, and the sedimentation ponds, as well as other areas where standing water can occur.

2 As part of the vegetation clearing procedures and subsequent maintenance efforts, will any chemical control measures be used? If so, what herbicides will be used and how will they be applied?

3 The Final EIS should discuss the source, as well as the treatment and disinfection procedures that will be followed prior to any domestic water use at the project site.

4 The Final EIS should also state whether or not any families will be relocated as a result of this project. Page 6-78 mentions one family that will relocate prior to operating this project. Are there others? If so, what relocation procedures will be followed?

Thank you for the opportunity of reviewing this EIS. Please send us a copy of the final document when it becomes available. If you should have any questions about our comments, please contact Mr. Lee Tate of my staff at FTS 236-6649.

Sincerely yours,

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Center for Environmental Health

Responses to Comments From Frank S. Lisella

1. Mosquito or other vector populations are not expected to pose a threat to company personnel. The primary mosquito control measure to be employed at Twin Oak Reservoir, "hot pond", and reclaimed stock ponds in mining areas, will be stocking with fish species which use mosquito larvae as a primary source of food (e.g., minnows like Gambusia spp.). TUGCO does not plan to use pesticides.

2. TUGCO does not plan to use herbicides in clearing of vegetation. Agricultural chemicals will be used to control insect pests on reclaimed lands. Their application will be carried out according to manufacturer's label instructions.

3. The potable water system currently in use at the Twin Oak project site was installed and is operated by Layne-Texas, TOSES construction contractor. This system uses well water which is subjected to activated charcoal filtration and chlorination prior to domestic use. Plans for the potable water system to be utilized during operation of TOSES are not finalized; however, design of and water samples from the system will be submitted to the Texas Department of Health prior to its use and operation.

4. TUGCO will be required to own or lease lignite mineral rights on a property before surface mining can begin. TUGCO will notify a resident landowner of their intent to mine his land six months prior to commencement of mining. The affected landowner will be compensated at fair market value for lost surface structures such as houses, barns, fences and water wells. During mining and reclamation, TUGCO will assume responsibility for property taxes. After regulatory requirements for successful reclamation are fulfilled, property control will be returned to the landowner.

   In the first five-year permit area, four families will be relocated using these procedures. Mine planning for the remaining mine areas is incomplete and no estimate of the number of relocations to take place in these areas is available at this time.

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Herman L. Miller
Deputy Commissioner
Management and Administration

November 22, 1982

Jarvis E. Miller, Ph.D., Director
Governor's Office of Budget and Planning
P. O. Box 13561, Capitol Station
Austin, Texas 78711

Attention: General Government Section

Subject: Twin Oak Steam Electric Station
Environmental Impact Statement
Robertson County, Texas
Environmental Protection Agency
Governor's Office of Budget and Planning
Draft EIS No. I-09-50-014

I-25

Dear Doctor Miller:

The Draft Environmental Impact Statement for the Twin Oak Steam Electric Station has been reviewed for its public and environmental health implications. The report was prepared by the U. S. Environmental Protection Agency; it is dated September 1982.

The Twin Oak Station is proposed to be located in Robertson County, Texas. Previously, reviews have been conducted concerning the proposals for the surface mining operations which will be an adjunct to the generating station.

1 Based on information contained in the subject Draft Environmental Impact Statement, no adverse public or environmental health conditions are expected to arise as a result of the electric station project if sound public health engineering principles are followed in the design, construction, maintenance and operation of the power plant facilities. It is presumed that proposed potable water supply, waste treatment and solid waste disposal facilities will be designed, constructed, and operated in accordance with applicable rules and regulations of this Department.

Responses to Comments From David M. Cochran

1. **Comments noted.**

Garvis L. Miller, Ph.D.
[illegible]
[illegible] 22, 1982

As the lead State agency in matters involving radioactivity, the following comments are offered regarding the content of the subject Twin Oak Station Environmental Impact Statement.

2 The quantities of trace elements presented in Table 6-2 appear to be high. It is suggested that consideration be given to the inclusion in the Final EIS of a discussion concerning the potential health effects to humans of trace elements such as beryllium, boron, cadmium, molybdenum, uranium, sulfur, thallium and other elements which are present in the lignite.

3 In discussions with representatives of Texas Utilities Services, Inc., the Texas Department of Health previously has suggested that a monitoring system designed to determine baseline radiological parameters for radioactivity in the vicinity of the plant be established at this time in order to accurately demonstrate at a later date, when the plant is in operation, whether or not any changes in levels of radioactivity have occurred. It was pointed out that such a monitoring system might be very useful in investigating any possible health effects resulting from stack emissions, fly ash or bottom ash disposal procedures or contamination of surface or groundwater sources used for public drinking water systems.

The Texas Department of Health (TDH) appreciates the opportunity to review and comment on the Draft Environmental Impact Statement for the Twin Oak Steam Electric Station project.

Sincerely,

David H. Cochran, P.E.
Associate Commissioner for Environmental and Consumer Health Protection

DHC:fhh

cc: Budget and Planning Division, TDH
Public Health Region 6, TDH
Bureau of Radiation Control, TDH
Water Hygiene Division, TDH
Occupational Health Program, TDH
Occupational Safety Division, TDH

Responses to Comments From David H. Cochran (concluded)

2. Additional information relative to health effects to humans from trace elements has been included in the Final EIS (see pages III-7 and III-8 of this Final EIS).

3. No specific plans for a baseline radiological monitoring program at TOSES currently exists. However, TUSI is currently evaluating the feasibility and cost of such a program. A study to determine background radiological levels will be performed prior to TOSES operation.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER-82/1608

NOV 29 1982

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Mr. Clinton B. Spotts
Regional EIS Coordinator
Environmental Protection Agency
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

We have reviewed the draft environmental impact statement for Twin Oak Steam Electric Station, Robertson County, Texas, and have the following comments.

GENERAL

Mineral Resources

Probable impacts to oil and gas wells at the minesites are mentioned, and the commitment of lignite to the project is acknowledged. We question the statement, however, that "Near-surface mineral deposits other than lignite are minimal and should not be significantly affected," at the minesites, which are about 10 times larger than the project site itself. Clay and silica sand resources and their production facilities are present in minesites C and D, and such resources may underlie sites A and B as well. (See W.L. Fisher and others, Rock and Mineral Resources of East Texas, University of Texas Bureau of Economic Geology Report of Investigations 54, pages 37-41, 54, 161, 207-208.) In addition, the project area lies within the Austin Chalk trend, recently an active area for oil and gas exploration.

1

We believe that the relationship between recovery of the lignite, as proposed, and production of clay and silica sand resources should be considered carefully and discussed in the final statement. Moreover, we suggest that the impact of the project on oil and gas exploration and future production also should be considered and described in the final statement, especially because the project is in an area that has substantial potential for oil and gas resources. Impacts to pipelines that cross the minesites also should be mentioned.

Cooling Reservoir

The State water rights permit calls for a flow of at least 15 acre-feet per month in Duck Creek below Twin Oak Cooling Reservoir. We recommend that low volume, continuous water releases be utilized to meet these downstream water rights rather than high volume, slug flows. A continuous flow regime would promote a more stable, productive aquatic environment in Duck Creek, thus partially mitigating stream resources lost as a result of cooling reservoir construction. Flushing flows could be provided for Duck Creek during periods of peak discharge from the reservoir (i.e., flood conditions).

2

The design criteria listed in Table 5-9 should be augmented to include the assumed recurrence period for the 48-hour storm.

Responses to Comments From Bruce Blanchard

1. Limited mining of Kaolinitic clay and their associated silica sands adjacent to the general project area has occurred in the past In recent years however, with the exception of the sand-kaolin processing plant currently operating near Kosse, Texas, the production of this readily available material has been declining. The potential loss of production from within the project area would not significantly affect the availability of these materials. Additional production, to make up the loss, is currently available from existing producers of these materials.

   The mining, in the first five years, of areas A & B would potentially affect two existing oil wells. One well is located outside the proposed mining area. The other well has been purchased by TU. Although the mine planning for areas C & D have not been completed, TU's general policy has been to relocate or purchase existing wells prior to mining. Currently, 20 to 25 wells are located in the potential mining areas contained in areas C & D.

   After mining and reclamation takes place, these areas would again be available for exploration, development, and production of oil and gas. The post-mining conditions should not hinder or remove potential future production.

   The mining of areas A & B, during the first five years would affect two existing product pipelines. One of these pipelines is owned by TU, while the other pipeline (which is presently being relocated) is owned by Humble Pipeline Co. The product pipelines in future mining areas (C & D) would be similarly treated as mine planning continues for final development.

2. Recommendation noted.

   The 48-hour storm used in design of TO dam is equivalent to the Probable Maximum Flood (PMF). Recurrence interval for the PMF is in excess of 500 years. These design criteria were approved by the Texas Water Rights Commission on 10/8/74.

3 The final statement should clarify what "associated facilities," as noted in Section 6.6.3.1, will be located within the 8600-acre buffer zone surrounding Twin Oak Reservoir. Figure 3.2 does not identify the locations of stockpile areas, ash and sludge disposal areas, and other appurtenant facilities. The final statement should also clarify whether a wildlife management plan has been developed for the buffer zone surrounding the cooling reservoir. Any habitat enhancement measures (e.g., food/cover plots, rock/brush piles, artificial nest structures) to offset the loss of upland habitat and riparian habitat should be addressed in the plan and the final statement. However, the buffer zone around the cooling reservoir will serve as a refuge for fish and wildlife resources and should help prevent adverse secondary impacts which commonly occur around the perimeter of reservoir projects.

Water Pollution Control Systems

4 The final statement should describe the principal features of plans for monitoring effects from the landfill facilities to groundwater. This information should include the location and probable depths of the monitoring wells.

Existing Conditions - Surface Water

5 The last paragraph in this section states that the Twin Oak mining operation has already been designated as an "existing source" by EPA and that New Source Performance Standards for the coal mining industry do not apply. We believe additional explanation for EPA's designation should be provided in the final statement, especially in light of the fact that a mining permit has not yet been filed with the State mining regulatory authority and mining is not scheduled to begin at the project until 1987.

Mine - Aquatic Communities

6 We note this section indicates that trees and brush will be bulldozed into piles and burned or buried. Consideration should be given to utilizing some of the larger trees and brush to create wildlife shelters on selected reclaimed mine lands. These shelters, constructed in accordance with sound wildlife management practices, would lend diversity to reclaimed sites thus promoting the recovery of the damaged ecosystem.

Environmental Consequences - Mine

7 Summaries of overburden analyses and extract/leaching test results should be presented to support the statement that pyritic materials from the mine area could affect groundwater quality on adjacent areas. Other potential groundwater contaminants should also be identified in the final statement. For example, the final statement should discuss effects to groundwater from any high, sulfur zones which have been identified in the coal or overburden.

Socioeconomic Resources

8 A detailed analysis covering socioeconomic impacts, benefits and mitigation measures to nearby communities including housing needs, public fiscal impacts, and impacts on local community infrastructure should be included in the final statement.

Responses to Comments From Bruce Blanchard (continued)

3. No ancillary facilities will be located in the fenced and posted 8,600 acre buffer zone surrounding Twin Oak Reservoir. An additional 3,400 acres will be occupied by the plant island, storage areas, disposal areas, pipeline corridor, railspur, transmission system, etc. Location of stockpile and disposal areas are shown in Figure 5-5, page 5-26 of the Draft EIS. Figure 5-4, page 5-20 of the Draft EIS illustrates the TOSES plant island.

   TUGCO's wildlife management plan adopted for the 8,600 acre buffer zone will consist of removing domestic livestock, fencing, posting, and restricting access to this area in order to provide protected natural habitat. Special habitat enhancement measures are not planned.

4. Design and proposed operation of TUGCO's groundwater monitoring program at TOSES was approved by the Texas Department of Water Resources (TDWR) on June 11, 1982. Well locations and installations were based on TDWR-recommended monitor well spacing. Monitor wells will be placed on 1200 foot centers around the perimeter of each disposal area.

   The tips of all monitor wells will extend well below the present groundwater zone of saturation. In addition, in areas where channel sands are present, the wells will extend through the sands to the surface of the underlying aquifer.

5. EPA's designation of the Twin Oak mine as an existing source was based on commencement of construction prior to the promulgation of new source performance standards (NSPS) for the coal mining industry (i.e., January 12, 1979). [See definition of "new source" in 40 CFR 122.3(a)(b)]. "Commencement of construction" includes entering binding contractual agreements for the purchase of facilities or equipment, which cannot be terminated without substantial loss [See 40 CFR 122.66(b)(3)]. TUGCO demonstrated to EPA that such contractual agreements were entered into prior to January 1979.

6. Although brush piles would increase the diversity of mined/reclaimed lands, the applicant does not plan to use brush cleared from mined areas to create wildlife cover. TUGCO feels the cost would be high and experience from their other mines indicates planting of herbacous and woody species with high wildlife value along fence rows, reclaimed stockponds, and along streambeds would provide initial cover as well as a seed pool for future vegetation establishment.

7. Summaries of lignite analyses (Draft EIS Table 6-1, page 6-5, Table 6-2, pages 6-6 and 6-7) were presented as part of the analyses of project area soils (Draft EIS Table 6-4, pages 6-12 and 6-13). Because overburden analyses and/or extract/leaching tests have not been performed, EPA identified the potential for impacts to groundwater quality from pyritic materials. The Company's experience at their existing mines (with lignite in a similar range of pyritic content as Twin Oak deposits) has not resulted in impacts on groundwater due to pyritic materials. Similarly, TUGCO indicated that they have not experienced problems with groundwater contaminants such as sulfur at their other existing mines. The Twin Oak lig lignite is generally characterized as "low sulfur Texas Lignite" (Draft EIS Table 6-1, page 6-5).

8. We believe the effects to nearby communities were adequately addressed in

9 The rationale for utilizing a 30-mile radius project area as a baseline (existing conditions) and then expanding the radius to 50 miles in socioeconomic effects discussions should be presented. The analysis does not appear valid due to this change. The rationale should include the reasons why it is assumed workers will travel 20-100 miles roundtrip to work at TOSES when over a dozen communities exist within a reasonable commuting distance.

10 Quantification and documentation to support the findings in the summary are needed. For example, if the area is as rural as indicated, the addition of 1500-3000 people could cause significant changes in the socioeconomic environment. If unemployment is low as in 1980, the impact of worker in-migration leading to potentially greater impacts should be analyzed.

11 We note that some tables in this section are based upon individual communities while others are based upon counties. A cross reference should be provided.

12 We note the survey by the Old West Regional Commission, as cited in Section 6.8.3.1, should be included in the bibliography.

Draft NPDES Permit

13 We believe that there should be a discharge limitation for selenium at proposed outfalls 002-lignite area runoff, 006-bottom ash sluice water, and 007-fly ash and FGD system water accumulation. Selenium discharges from a similar lignite-fueled, steam electric generating station in East Texas have resulted in fish mortality, reproductive failure, and the accumulation of unacceptable levels of selenium in fish tissues. Selenium discharge limitations have been commonly applied to other lignite-fueled stations in Texas due to the potential adverse environmental effects of this toxic trace element; therefore, this facility should have comparable limitations proposed for its operation.

14 We also recommend that a specific monitoring program be established for selenium concentrations as a condition for the issuance of the NPDES permit. If this monitoring program indicates increased accumulation of selenium in fish tissues or reservoir sediments, mitigating measures or alternate methods of disposal would need to be considered by EPA and the applicant.

We hope these comments will be helpful to you in the preparation of a final statement.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review

Responses to Comments From Bruce Blanchard (concluded)

9. Socioeconomic effects from major projects are rarely restricted to predetermined distances (i.e., 30 miles) from the project. Rather, the size, facilities, and area of surrounding communities/towns determine and influence effects. The availability of good roads into the project site is also important. As stated in errata section (see #98, page III-7 of this Final EIS), the socioeconomic analysis was based on research done by Mountain West.

10. The addition of 1500 to 3000 people to the project area is evaluated in Section 6.8 of the Draft EIS. Additional impact information is included in errata section (see #99, page III-7 of this Final EIS).

11. Comments noted.

12. The Old West Survey was referenced by Mountain West which inturn was included in the bibliography.

13-14. EPA's draft NPDES permit has been revised to include discharge limitations for selenium from outfall numbers 006 and 007. A monitoring program for selenium concentrations is also included in the draft permit. EPA's revised NPDES permit is contained in the Final EIS. We did not include selenium limitations or monitoring of selenium from outfall number 002 since this waste stream should not be contaminated with selenium.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FORT WORTH SERVICE OFFICE
221 WEST LANCASTER AVENUE
P.O. BOX 2905
FORT WORTH, TEXAS 76113

REGION VI

IN REPLY REFER TO:

November 30, 1982

RECEIVED
DEC 1 1982
6 ES

Mr. Clinton B. Spotts
Regional EIS Coordinator
U.S. Environmental Protection Agency
Region VI
1201 Elm Street
Dallas, TX 75270

Dear Mr. Spotts:

The Draft Environmental Impact Statement for Twin Oak Steam Electric Station in Robertson County, Texas, has been reviewed in the Department of Housing and Urban Development's Dallas Area Office and Fort Worth Regional Office. As per your telephone conversation with Otis Trimble of my staff, the Department's review comments follow:

1. Cross-reference to incoming inquiry.

   The proposed action is the issuance of a new source National Pollutant Discharge Elimination System (NPDES) permit for wastewater discharge from the Twin Oak Steam Electric Station in Robertson County, Texas.

2. HUD comment on the Statement.

   a. Figure 6-8 on page 6-33 shows much of the project site as consisting of Special Flood Hazard Areas. However, we failed to note any mention of compliance with the Floodplain Management Executive Order, E.O. 11988. In our view, such mention would improve the subject Statement. 1

   b. Section 6.6.1.2 on page 6-93 makes mention of "Non-forested wetland areas." As the definition of "wetlands" in Section 7.(c) of the Protection of Wetlands Executive Order, E.O. 11990, is quite broad, documentation of compliance with the subject Executive Order or mention of why such compliance is not called for would, in our view, improve the subject Statement. 2

3. HUD comment on the Proposal.

   HUD does not oppose the proposed action.

Sincerely,

Victor J. Hancock
Environmental Clearance Officer

II-30

Responses to Comments From Victor J. Hancock

1. The Twin Oak Steam Electric Station will not be constructed in a Special Flood Hazard Area, only the Cooling Reservoir. The proposed project complies with the Floodplain Management Executive Order, E.O. 11988.

2. The word "wetlands" was changed to "wet habitats". No wetlands requiring 404 permit action were identified in the project area.

DEC 8 1982

OFFICE OF THE GOVERNOR

WILLIAM P. CLEMENTS JR.

December 1, 1982

Mr. Clinton B. Spotts
Regional EIS Coordinator
U.S. Environmental Protection Agency
1201 Elm Street
Dallas, Texas 75270

Dear Mr. Spotts:

The Draft Environmental Impact Statement pertaining to Twin Oak Steam Electric Station, prepared by the Environmental Protection Agency, has been reviewed by the Budget and Planning Office and interested state agencies. Copies of the review comments are enclosed for your information and use. The State Environmental Impact Statement Identifier Number assigned to the project is 2-09-50-014.

1 The following specific comments are noted for your consideration. The Texas Department of Health recommends that the Final EIS include a discussion of the potential health effects of trace elements such as beryllium, boron, cadmium, molybdenum, uranium, sulfur, thallium and other elements which are present in lignite.

The Budget and Planning Office appreciates the opportunity to review this project. If we can be of any further assistance during the environmental review process, please do not hesitate to call.

Sincerely,

William C. Hamilton

William C. Hamilton, Manager
General Government Section
Budget and Planning Office

ms

Enclosures: Comments by Texas Air Control Board
Texas Department of Agriculture
Texas Department of Health
State Department of Highways and Public Transportation
Texas State Soil and Water Conservation Board
Texas Department of Water Resources

II-31

Response to Comments From William C. Hamilton

1. A discussion of the potential health effects from selected trace elements has been added (see pages III-7 and III-8 of this Final EIS).

Suggested Questions to be Considered by Reviewing Agencies:

1. Does the proposed project impact upon and is it consistent with the plans, programs and statutory responsibilities of your agency?
2. What additional specific effects should be assessed?
3. What additional alternatives should be considered?
4. What better or more appropriate measures and standards should be used to evaluate environmental effects?
5. What additional control measures should be applied to reduce adverse environmental effects or to avoid or minimize the irreversible or irretrievable commitment of resources?
6. How serious would the environmental damage from this project be, using the best alternative and control measures?
7. What specific issues require further discussion or resolution?
8. Does your agency concur with the implementation of this project?

As a part of the environmental impact statement review process, the Budget and Planning Office forwards to the originating agency all substantive comments which are formally submitted. If, after analyzing this document, you conclude that substantive comments are unnecessary, you may wish to so indicate by checking the box below and forwarding the form to this office. This type of response will indicate receipt of this document by your agency and that no formal response will be prepared.

☐ No Comment.

Name and Title of Reviewing Official

Texas Department of Agriculture
Agency

1 We have examined the draft EIS for Twin Oak Steam Electric Station in Robertson County. The report is well prepared and we recognize the necessity for this and similar projects. Relatively large tracts of land are involved in each project - in this case, 38,826 acres. We do urge careful monitering of the restoration of mined lands and the potential production of acid rain.

Response to Comments From John E. Hutchinson

1. Comments noted.

BRAZOS VALLEY DEVELOPMENT COUNCIL
P.O. DRAWER 4128 • BRYAN, TEXAS 77805

Executive Director
GLENN J. COOK

December 6, 1982

Ms. Darlene Owsley
Environmental Protection Agency
1201 Elm Street
Dallas, TX 75270

Dear Ms. Owsley:

The comments made by Michael D. Brooks at the public hearing held at Franklin, Texas on November 9, 1982, on the EPA Draft Environmental Statement, Twin Oak Steam Electric Station, do not reflect the official views of the Brazos Valley Development Council.

The Council has consistently supported this important project and projects related thereto; such, as Lake Limestone, parks at Lake Limestone and housing developments in the area.

A study of the impact of the station on the economy of Robertson County was conducted by the Council in cooperation with the local elected officials in Robertson County; thus, we are aware of its economic importance.

1 During the discussions on support of this project and related projects and during the impact study, no real environmental concerns were expressed to the Council.

Due to the lack of experienced technical environmental personnel, we do not intend at this time to present the environmental statement to our governing body for official comments.

Please advise if I can provide any information that might be helpful to you in issuing the permit.

Very truly yours,

Glenn J. Cook
Executive Director

GJC/jtm

cc: Mr. H. B. Coffman

DEC 7 1982
6 ES

F4-33

Response to Comments From Glenn J. Cook

1. Comments noted.

PART III. MODIFICATIONS AND CORRECTIONS TO THE DRAFT EIS

This part contains revisions made to the Draft EIS based on new, updated, or more complete information, or errors and omissions identified during the public review process. Minor changes are incorporated as errata in Section A. Where significant changes were required, the entire page from the Draft EIS has been reprinted, with the changes highlighted by vertical lines in the margin. Reprinted pages are contained in Section B.

A. ERRATA

The following changes to the Draft EIS are those considered to be minor, and therefore the affected pages have not been reprinted in full. The changes listed below are hereby incorporated into the Draft EIS. Paragraph 1 will always be the first full paragraph on a page.

1. Page 1-2, paragraph 3, line 4: Change "750" to "950".

2. Page 1-4, paragraph 1, line 5: Change "750" to "950".

3. Page 1-7, paragraph 3, line 9-12: Delete sentences beginning with "Most of the ... in grassland. Some select ... is established" and add

   "The 2,330 acres inundated for Twin Oak Reservoir will be fenced and posted as will an additional 8,600 acres of Company owned lands surrounding Twin Oak Reservoir and the plant. This fenced and posted area will provide protected habitat for a diversity of terrestrial and aquatic wildlife species."

4. Page 1-9, paragraph 2, line 3: Change "will be permitted" to "is contemplated".

5. Page 1-9, paragraph 2, line 5: After "... plant site" and before "Access will ..." add "Although subject to change, no local or state agency has indicated interest in providing and operating recreational facilities on Twin Oak Reservoir".

6. Page 3-6, Table 3-1: After COE permit informaton add
   "MSHA Mine I.D. Number #41-02788, Applied 7/31/78
   Received 8/15/78".

7. Page 3-6, Table 3-1: Change received date on EPA Permit # TX 076465 from November 28, 1981 to May 10, 1982 and also add:
   "TRC Surface Mining Permit — Applied - No
   Received - No".

8. Page 4-1, paragraph 2, line 5: Delete "s" from "alternatives".

9. Page 4-2, paragraph 1, line 1: Change "an annual rate of 7%" to "about 6% per year".

10. Page 4-2, paragraph 1, line 6: Change "5%" to "4.5%".

11. Page 4-2, paragraph 3, lines 1, 2, and 4: Change "1981" in line 1 to "1982"; change "17,412" in line 2 to "17,957"; change "and TUCS by 1985" in line 4 to "by 1985 and for TUCS by 1987".

12. Page 5-2, paragraph 2, second bullet: Change "sites" to "site".

13. Page 5-2, paragraph 1, line 2: Change sentence to read "commercial lignite ... Robertston County and Limestone County".

14. Page 5-2, paragraph 2, second bullet: Delete ( ) from around "increased reliance".

15. Page 5-5, first bullet in table, line 3: Add "at" after "units" and before "100%" to read "units at 100%".

16. Page 5-6, under Western Coal: Correct spelling of "Commerically" to "Commercially".

17. Page 5-10, paragraph 2, lines 5 and 6: Correct sentence to read "cooling towers were not feasible at any sites ... evaluation".

18. Page 5-14, Section 5.3, line 4. Delete "nearing completion or is" from sentence.

19. Page 5-18, line 2: Change "will be" to "has been".

20. Page 5-18, paragraph 2, line 5: Correct spelling of "commerical" to "commercial".

21. Page 5-19, line 5 in tabular data: Change the number "70" under last column for make-up water pipeline to a "3".

22. Page 5-19, paragraph 1, line 3: Change "timbers" to "timber".

23. Page 5-21, paragraph 2, lines 2 and 3: Rewrite line 2 to read "... high pressure section, opposed-flow intermediate section and two double flow low pressure sections." and in line 3, change "3,600 RPM" to "3,500 PSI at 1000°F" ... .

24. Page 5-21, paragraph 3, line 8: Delete "economizer" from sentence.

25. Page 5-22, partial paragraph above 5.3.1.2, lines 1, 2, and 3: Delete "to" between 26 and 345 Kv, and replace with "-"; remove "to" between 11 and 138 Kv, and replace with "-".

26. Page 5-22, last paragraph, line 2: Change "TSP" to "ash".

27. Page 5-23, first partial paragraph, lines 6 and 7: Change lines 6 and 7 to read "... ACFM (actual cubic feet per minute) of flue gas with a ... of 560 sq ft per 1000 ACFM and a ... of 99.75%". Add sentence that reads "The total installed SCA is 672 sq ft per 1000 ACFM." before sentence that reads "This particulate ... not exceeded".

28. Page 5-23, paragraph 2, line 9: Add "tower" to sentence that reads "At periodic ... the tower reservoir will ... for disposal."

29. Page 5-23, paragraph 2, line 2: Change "ramps" to "hoppers".

30. Page 5-24, paragraph 1 under 5.3.1.3, lines 3 and 4: Change "the condensate" to "water".

31. Page 5-24, last paragraph, line 4: Change the word "lake" to "reservoir".

32. Page 5-27, first line: Change the word "after" to "before".

33. Page 5-27, last paragraph, line 5: Change line to read "boiler will be demineralized from well water and stored".

34. Page 5-28, paragraph 1, line 10: Add "runoff" after "rainwater" to read "rainwater runoff".

35. Page 5-28, paragraph 2, line 2: Add "recycled or" before "discharged via ...", to read "recycled or discharged via...".

36. Page 5-29, Table 5-8, right hand column across from 005: Add "or recycle" to description to read, "Solids settling; evaporation; ...; discharge or recycle."

37. Page 5-29, Table 58, right hand column across from 008: Add "or recycle" to description to read "Solids —; discharge or recycle."

38. Page 5-31, second bullet: Change paragraph to read, "The diked oil storage area and oil unloading area will be treated for settling of suspended solids and water oil separation. Discharge will occur at outfall 004 into the hot pond of Twin Oak Reservoir."

39. Page 5-31, third bullet: Change first two sentences to read "Low volume wastewater will flow through a retention pond which will provide for removal of suspended solids by gravity sedimentation, and water oil separtation will be accomplished by gravity flotation."

40. Page 5-31, last bullet, lines 5 and 6: Remove "of fines" from sentence starting in line 4 with "Rainfall on ...; and change next sentence to read "Water from the "east and" west ponds will be ... inplant reuse.

41. Page 5-32, paragraph 1, line 7: Change "Ordinance" to "Order".

42. Page 5-32, paragraph 2, line 3: After, "... 24 hour storm event and" add "those holding process water will be".

43. Page 5-34, paragraph 1, last 2 sentences: Change next to last sentence to read "Both will be segregated into a neutralization facility (station sump) for ... nonhazardous." and remove the last sentence of the paragraph.

44. Page 5-34, paragraph 2, line 1 and 2: Change sentence to read "Small quantities of other non-hazardous wastes including waste oil, and used batteries, will ... recycled."

45. Page 5-34, paragraph 2: Add sentence to paragraph which reads "Preliminary approval of design and plans for TOSES solid waste management was granted by TDWR on 11 June 1982."

46. Page 5-37, next to last sentence: Change "TWRC" to "TWC".

47. Page 5-38, paragraph above 5.3.1.9: Change "103°F" in line 2 to "110°F"; change "110°F" in line 3 to "115°F".

48. Page 5-39, last sentence before 5.3.2: Add "less transmission facilities" after "... transport facilities".

49. Page 5-48, first paragraph, line 2: Change "northwest" to "north-northeast".

50. Page 5-48, paragraph under 5.3.3.2, next to last line: Change "79,000" to "110,000".

51. Page 5-49, Table 5-12, title: Title should read "LIGNITE AND ASH ANALYSES ...".

52. Page 5-49, *footnote, second line: Change "65,000" to "6,500".

53. Page 5-51, paragraph 1 under 5.3.3.5, line 8: Change "500-750" to "950".

54. Page 5-57, paragraph 2, line 10: Correct spelling of "overburdern" to "overburden".

55. Page 6-2, last paragraph, line 1 and 2: Change sentence to read "The southern-most ... Calvert Bluff Formation."

56. Page 6-15, paragraph under Geology: Correct spelling of "homogenous" to "homogeneous".

57. Page 6-29, paragraph under 6.2.3.1: Change last sentence to read "... Facilities, such ... little impact, since these areas ... clay liners, a requirement of the TDWR."

58. Page 6-30, first full paragraph, line 3: Change "will" to "could".

59. Page 6-32, paragraph 3, lines 1-4: Change to read:

> "Mining for the fuel reserve for the TOSES will occur in only a small portion of Steel Creek ..., and Willow Creek) in the northern mining area, and in tributaries of South Walnut Creek in the southern mining area. Steel Creek ... direction. South Walnut Creek is a ...".

60. Page 6-42, paragraph above 6.3.1.3, last sentence: Add "permit" after "NPDES".

61. Page 6-42, first paragraph under 6.3.1.3: Add these two sentences to paragraph "Water supplies in the area have been developed for industrial as well as agricultural and municipal uses. The TDWR granted water rights on these bases."

62. Page 6-46, paragraph 1: Add this sentence to the paragraph "Water rights and water usage approved by the TWC for the TOSES included development of the reservoir, use of surface runoff from Duck Creek with maintenance of 15 ac-ft/month downstream, and diversion of make-up water from Lake Limestone.

63. Page 6-46, paragraph 2, line 5: Change "given" to "drought", and "will" to "would".

64. Page 6-47, paragraph 2 under 6.3.3.1, line 5: drop "and dredging" from sentence.

65. Page 6-48, last paragraph: Delete paragraph.

66. Page 6-49, paragraph 2 under 6.3.3.3, lines 5, 6, and 7: Change to read "Willow Creek) and tributaries to South Walnut Creek. Most streams ..., conforming to the regulations of the Surface Mining Control ...."

67. Page 6-50, paragraph under Water Quality, line 6 and 7: Change "200" to "600", and add "by mining," between ... "time" and "and slopes of".

68. Page 6-50, last paragraph, lines 1, 2, and 3: Change "topsoil" to "overburden"; remove sentence "However, the ... between spoil piles."

69. Page 6-51, top partial paragraph, last sentence. Delete sentence "If class soil ... of $1X10^{-7}$ cm/sec".

70. Page 6-52, paragraph 2, line 3: Change "25,000" to "20,000".

71. Page 6-55, paragraph 2, line 11: Add "not" to line to read "P-E Index can ... because it does not account ...".

72. Page 6-64, paragraph under 6.4.2, lines 5,6, and 7: Remove "at trend"; and remove sentence "However, in the ... be less degraded."

73. Page 6-64, paragraph 1 under 6.4.3.1, line 1 and 2: Change "substantial" to "increased", correct spelling of "quantitities" to "quantities".

74. Page 6-69, paragraph 3, lines 9 and 10: Change lines to read "burned will contain approximately ... 20% will fall to the bottom of the furnace and be removed by bottom ash sluice water. Of the 80% ... leaves the furnace entrained in flue gas, in excess of 99% ...".

75. Page 6-71, paragraph 1, line 4: Change "acid" to "the", add "of the oxides" between "deposition" and "would".

76. Page 6-71, paragraph 1, line 6 and 7: In line 6, change "acid deposition" to "these oxides", and in line 7, change "acid" to "their".

77. Page 6-72, paragraph 1 under 6.4.3.3, line 5: Add "The P-E Index can be misleading since it does not consider all factors affecting fugitive dust emissions." after sentence ending with "national average".

78. Page 6-76, paragraph 2 under 6.5.1.1, line 8: Correct spelling of "leves" to "levels" and "loal" to "local".

79. Page 6-79, paragraph 1 under 6.5.3.2, lines 3 and 4: Change sentence to read, "Since the corridors cross ... rural environment, fewer sensitive ... affected".

80. Page 6-80, paragraph 1, line 12: Correct spelling of "electomagnetic" to "electromagnetic".

81. Page 6-93, paragraph 1, line 1: Change "wetland areas" to "wet habitat".

82. Page 6-95, last paragraph, lines 1, 2, 3, and 5: Remove comma after "stream" in line 1 and after "Creek" in line 2; remove "predominately" in line 1; remove "virtually" in line 3, and move "be" so that it appears after "time" in line 5.

83. Page 6-96, paragraph 1, lines 5 and 6: Insert "treated discharge" for "runoff", and insert "sewage treatment facility" for "area sanitary sewer discharge".

84. Page 6-96, paragraph 2, lines 13 and 14: Add "employed in the Twin Oak intake structure" to sentence ending with "... screen wash system ... ."; change last sentence to read, "The design of the intake facility in Lake Limestone and Twin Oak Reservoir were reviewed ... by EPA on 5 November 1981."

85. Page 6-97, paragraph 2, line 2: Insert "The reservoir will be fenced and posted." as a new sentence after "... will cease".

86. Page 6-97, paragraph 2, line 11: Add "and posted" after "fenced".

87. Page 6-98, paragraph 2, lines 1 and 6. Line 1 add "of the TOSES" between "operation" and "include"; and add "short-term" between "a" and "decline"; In line 6 add "in the project area due to an increase in the human population." after "wildlife".

88. Page 6-98, paragraph 1 under 6.6.3.2, line 5: Change "exists" to "exist".

89. Page 6-101, paragraph 2, line 5: Correct spelling of "dishcarged" to "discharged".

90. Page 6-104, last paragraph, lines 3 and 4: Change sentence to read, "Mining will begin ... removal of vegetation from 950 acres."

91. Page 6-104, last paragraph, line 6: Correct spelling of "continous" to "continuous".

92. Page 6-107, second bullet, line 3: Close parenthesis after "liming)".

93. Page 6-108, fifth bullet: Change "CRF" to "CFR".

94. Page 6-108, last paragraph, line 3: Correct spelling of "through-fares" to "thorough-fares".

95. Page 6-111, paragraph under Cooling Reservoir: Delete last sentence.

96. Page 6-114, paragraph above 6.7.3.2, top line: Change "no adverse effect" to "no effect".

97. Page 6-120, paragraph 2, line 4: Add "which had " after "County," to read "County, which had ...".

98. Page 6-128, paragraph 2, all: Change paragraph to read "The area of .... 50-mile radius. A 50-mile radius was used ... because past research (Mountain West 1976) has found that construction and operation workers will live within 1-hour commuting time (approximately 50 miles) of a given project site, if suitable areas to live are available. Therefore, most socioeconomic effects from the Twin Oak Project would be expected to occur within approximately 50 miles of the project site.

99. Page 6-133, paragraph 1: Add the following to the end of the paragraph "Although we feel the above assessment is accurate, if the three major cities (Waco, Bryan-College Station and Temple) do not receive this high influx of people, effects both positive and negative to smaller towns in the immediate vicinity of the project area could be greater. Some potential effects include added stress on housing, schools, medical services, and other community services and facilities. However, increased revenues and taxes should mitigate most of the adverse effects."

100. Page 6-146, paragraph 1 under 6.9.3.3, line 3: Change "750" to "950".

101. Page 6-164, add the following discussions before the first full paragraph:

> "Health effects due to radiation from the power plant and mine are expected to be insignificant. As noted in Section 6.4.3.1, the levels of particulate removal at the TOSES is in excess of 99%. Past studies of particulate removal systems equivalent to the TOSES system indicate there is no apparent problem with radioactivity due to lignite combustion if adequate electrostatic precipitator systems are utilized."
>
> "Fugitive dust would be produced at a rate of about 0.06 grams (g) per 100 g of material handled, with 1/10 of 1% of the particles released small enough to travel large distances and potentially present an exposure hazard to the surrounding area. With the amounts of lignite to be handled, the amounts of radioactive fugitive dust emissions should be insignificant. In addition, the release of radon gas (Rn 222) due to the processing and transportation of the lignite should also be insignificant."

"Trace quantities of Rn 222 will be emitted from the bottom ash and fly ash at the materials handling area, but these emissions are also expected to be insignificant."

"At certain concentrations, various trace elements which may be found in lignite or overburden, can also have adverse effects on human health. Some of the possible health problems associated with high levels of trace elements include: cadmium - prostate cancer; berylium -carcinogenesis; arsenic - cancer of the skin, poisoning; sulfates - bad taste and a laxative effect in drinking water."

"Since soils will selectively absorb and alter various contaminants, including many heavy metals, the presence of these contaminants can be observed in surrounding areas. The RCRA regulation has therefore set a 500 foot buffer for wells around reclaimed lands."

"Ways to prevent possible contamination due to toxicants include composite sampling of overburden soils on reclaimed land as well as monitoring groundwater from test wells downdip of the mining site after reclamation."

102. Page 6-164, paragraph above 6.13: Add the following sentence to the end of the paragraph "TUGCO reports that their safety record over the past 11 years at other mines does not reveal adverse health effects occurring due to extraction and handling of lignite."

103. Page 6-164, second bullet under 6.13.1, line 4: Correct spelling of "anticpate" to "anticipate".

104. Page 6-165, second bullet, lines 3 and 4: Change sentences to read, "The location of the Houston Lighting and Power mine and the Twin Oak mine are shown in Figure 5-3. A third mine for which the exact location is not known is also planned by Phillips' Coal Company for Robertson County."

105. Page 6-165, paragraph 2 under 6.13.3.1, line 2: Correct spelling of "electricty" to "electricity".

106. Page 6-166, end of paragraph above 6.13.3.2: Add sentence to paragraph which reads "Production of electricity from the TOSES will represent a significant and positive socioeconomic effect in the project area."

107. Page 6-166, paragraph 1 under 6.13.3.3, lines 1 and 2. Add "shovel" following "dragline" and remove "shovel" from next line.

108. Page 6-167, paragraph under 6.14.1, line 1: Delete "and Alcoa Company".

109. Page 6-167, paragraph under 6.14.2, line 5: Delete "potential" from line.

110. Page 6-167, paragraph under 6.14.2, lines 8 and 9: Correct spelling of "applicat" to applicant, and add "would occur" after "Duck Creek".

111. Page 6-168, paragraph 4, lines 1 and 2: Correct sentences to read, "Existing vegetation will be cleared prior to construction.", and delete sentence "Some revegetation ... areas."

112. Page 6-170, paragraph under 6.18, line 16. Insert "Also, two Phillips Coal Company power plant projects are in the preliminary planning stages in the project area." after sentence ending with "Houston Lighting and Power."

113. Page 7-3, last name under Federal list: Correct spelling of "Gramn" to "Representative W.P. Gramm".

B. PAGE REVISIONS OR ADDITIONS

The following pages were reprinted due to the inclusion of complicated or extensive changes. Changes are indicated by a vertical line in the left margin.

concrete pipeline will convey make-up water and discharge through an outlet structure into a small tributary branch of Twin Oak Reservoir.

The first 750 MW generating unit is scheduled for commercial operation in February 1988. The second unit is scheduled for commercial operation in February 1990. On-site construction of boiler foundations for both units began in the first quarter of 1979 in order to comply with TUSI's Texas Air Control Board (TACB) permit. Start of construction under Section 165 of the Clean Air Act was reported to EPA on 3 March 1978, in order to comply with the provisions of the Prevention of Significant Deterioration (PSD) permit. Presently, overall construction of the TOSES is less than 10% complete.

Fuel for both units at TOSES will come from the nearby Twin Oak surface lignite mine which is comprised of three distinct mining areas totaling approximately 33,000 acres. Mining areas are located about 8 miles northeast and southwest of the TOSES project site. Much of the detailed information for the mine has not yet been developed. With both Twin Oak units in operation at an annual capacity factor of 70%, the production of lignite from the mine will be approximately 7.9 million tons per year. Lignite will be transported by approximately 15 trucks over a series of short haul roads to loading stations at each deposit. Company-owned and operated electric unit trains will then transport the lignite to the plant daily.

3.3 OTHER FEDERAL AND STATE LEGISLATIVE REQUIREMENTS

Federal and state permits and approvals required for construction and operation of TOSES are listed in Table 3-1. Excepting EPA's NPDES permit for TOSES operation, all permits and approvals have been received.

The US Army Corps of Engineers regulates the discharge of dredged and fill material into the waters of the United States under authority of Section 404 of the Clean Water Act (Public Law 95-217, dated 27 December 1977). A general permit has been issued on a nationwide basis for the placement of dredged and fill material into certain waters of the United States. These include: nontidal rivers, streams, and their impoundments, including their adjacent

wetlands all of which are located above the headwaters of the stream. Headwaters is defined as that point on a nontidal stream above which the average annual flow is less than five cubic feet per second. This permit also authorizes discharges into other nontidal waters of the United States that are not part of a surface tributary system to interstate waters or navigable waters of the United States.

The pumping station for the make-up water pipeline was authorized by the Corps of Engineers as part of the Sterling C. Robertson Dam (Lake Limestone), under permit number W-N-443-41-PERMIT-141, issued 18 April 1978.

By letter dated 15 July 1981, the Corps of Engineers stated that the TOSES and its related structures (surface lignite mines, cooling reservoir, rail spurs and water make-up line) would result in discharges above the headwaters of various streams, and therefore is authorized under a nationwide general permit.

Because pre-existing support towers were utilized for that segment of the proposed transmission line which crosses Lake Limestone, there were no discharges of fill material, and therefore no permit was required under Section 404. The Corps of Engineers has determined that any stream crossings by remaining proposed transmission lines will occur above the headwaters of those streams, and therefore will be authorized under a nationwide general permit for any discharges incidental to their construction.

TABLE 3-1. FEDERAL AND STATE PERMITS AND CERTIFICATIONS FOR WHICH APPLICATIONS HAVE BEEN SUBMITTED AND/OR RECEIVED

AGENCY	PERMIT TYPE	PERMIT #	STATUS
TDWR	Dam Construction Permit	#2958	Applied 5/10/74 Received 10/8/74
TDWR	Water Rights Contract	#CP-255	Applied 6/21/74 Received 10/8/74
TDWR	Waste Control Order	#01986	Applied 4/18/75 Received 2/10/82
PUC	Certificate of Convenience and Necessity	NA	Received 8/30/76
COE	Section 404	W-N-443-41-Permit 141 (Pump Station)	Issued 4/18/78
COE	Section 404	Nationwide General Permit (SES and related structures)	Reviewed 7/15/81
MSHA	Mine I.D. Number	#41-02788	Applied 7/31/78 Received 8/15/78
TACB	Construction Permit Boilers 1 & 2	C-3992 C-3993	Applied 12/31/75 Received 2/28/78
TACB	Construction Permit Ash Handling System	C-3995	Applied 12/29/75 Received 6/22/79
TACB	Construction Permit Lignite Handling System	C-3994	Applied 12/29/75 Received 6/22/79
EPA	PSD Permit	PSD #TX-32	Applied 6/20/77 Received 9/22/77
FAA	Stack Lighting Approval	78-ASW-705-OE 78-ASW-706-OE	Received 5/4/78
TDWR	Solid Waste Disposal Facilities Registration	Registration #32043	Applied 12/30/80 Received 6/11/82
EPA	NPDES Permit (Mine)	EPA ID# TX076465	Applied 12/5/77 Received 5/10/82
EPA	NPDES Permit (Station)	EPA ID# TX0668021	Applied 6/3/75 Received - No
TRC	Surface Mining Permit		Applied - No Received - No

ACRONYMS

COE - Corps of Engineers
EPA - Environmental Protection Agency
FAA - Federal Aviation Administration
PUC - Public Utility Commission
TACB - Texas Air Control Board
TDWR - Texas Department of Water Resources
TRC - Texas Railroad Commission
MSHA - Mine Safety and Health Administration

Source: TUSI 1982.

Table 4-1. Projected demand for electrical power in TP&L service area versus TP&L generating capability with and without TOSES during the years 1985 through 1990.

Year	Peak Demand (MW)[3]	Net Capacity[1][3] with TOSES (MW)	(% Reserve)	Net Capacity[2][3] without TOSES (MW)	(% Reserve)
1985	6,940	8,310	19.7	8,310	19.7
1986	7,270	8,723	20.0	8,723	20.0
1987	7,608	8,723	14.6	8,723	14.6
1988	8,004	9,335	16.6	8,723	9.0
1989	8,388	9,485	13.1	8,873	5.8
1990	8,791	10,098	14.9	8,873	0.9

[1]Assumes purchases of: 95 MW in 1985
95 MW in 1986
95 MW in 1987
145 MW in 1988
145 MW in 1989
195 MW in 1990

[2]Assumes purchases of 95 MW in 1985-1990.

[3]Demands include that of Tex-La Electric Power Cooperative, Inc. and capabilities include the capability of Comanche Peak units which is owned by Tex-La.

Source: Adapted from Texas Utilities Services Inc. 1980. Environmental information document for Twin Oak Steam Electric Station, Robertson County, Texas. Dallas, Texas, variously paged, updated October 1982.

Table 4-2. Projected demand for electrical power in the TUCS service area versus the company's generating capability with and without TOSES during the years 1985 through 1990.

Year	Peak Demand (MW)[3]	Net Capacity[1][3] with TOSES (MW)	(% Reserve)	Net Capacity[2][3] without TOSES (MW)	(% Reserve)
1985	14,845	18,934	27.5	18,934	27.5
1986	15,445	19,969	29.3	19,969	29.3
1987	16,055	19,969	24.4	19,969	24.4
1988	16,735	20,582	23.0	19,969	19.3
1989	17,410	21,187	21.7	20,574	18.2
1990	18,130	21,684	19.6	20,459	12.8

[1]Assumes purchases of:
95 MW in 1985
95 MW in 1986
95 MW in 1987
145 MW in 1988
145 MW in 1989
195 MW in 1990

[2]Assumes purchases of 95 MW in 1985-1990.

[3]Demands include that of Tex-La Electric Power Cooperative, Inc. and capabilities include the capability of Comanche Peak units which is owned by Tex-La.

Source: Adapted from Texas Utilities Services Inc. 1980. Environmental information document for Twin Oak Steam Electric Station, Robertson County, Texas. Dallas, Texas, variously paged, updated October 1982.

generating capacity is needed to meet the 15% reserve level. New units currently planned by TP&L and TUCS are as follows, with shares of each to be owned by TP&L:

PLANT/UNIT	COMMERCIAL OPERATION	SHARE TO BE OWNED BY TP&L[1]
Comanche Peak/1	1984	35 5/6%[3]
Comanche Peak/2	1985	35 5/6%[3]
Twin Oak/1	1988	75%[2]
Twin Oak/2	1990	75%[2]
Forest Grove	1989	20%
Martin Lake/4	1991	32.5%

---

[1]Share subject to change on later units.

[2]75% of capability and 70% of cost.

[3]Includes capability owned by Tex-La.

Table 4.1 for TP&L and Table 4.2 for TUCS indicate capability and reserve anticipated for TP&L and TUCS respectively assuming the above-listed units are constructed. Also shown are conditions without the proposed TOSES. The reserve capacity of TP&L alone is inadequate beginning in 1987, if TOSES is not constructed. Reserve for TUCS reaches a minimum of 12.8% in 1990 without the proposed TOSES.

Ultimate responsibility of deciding whether or not a new power plant is needed in Texas rests with the Public Utility Commission (PUC). The PUC issued a Certification of Convenience and Necessity for the proposed TOSES on 30 August 1976.

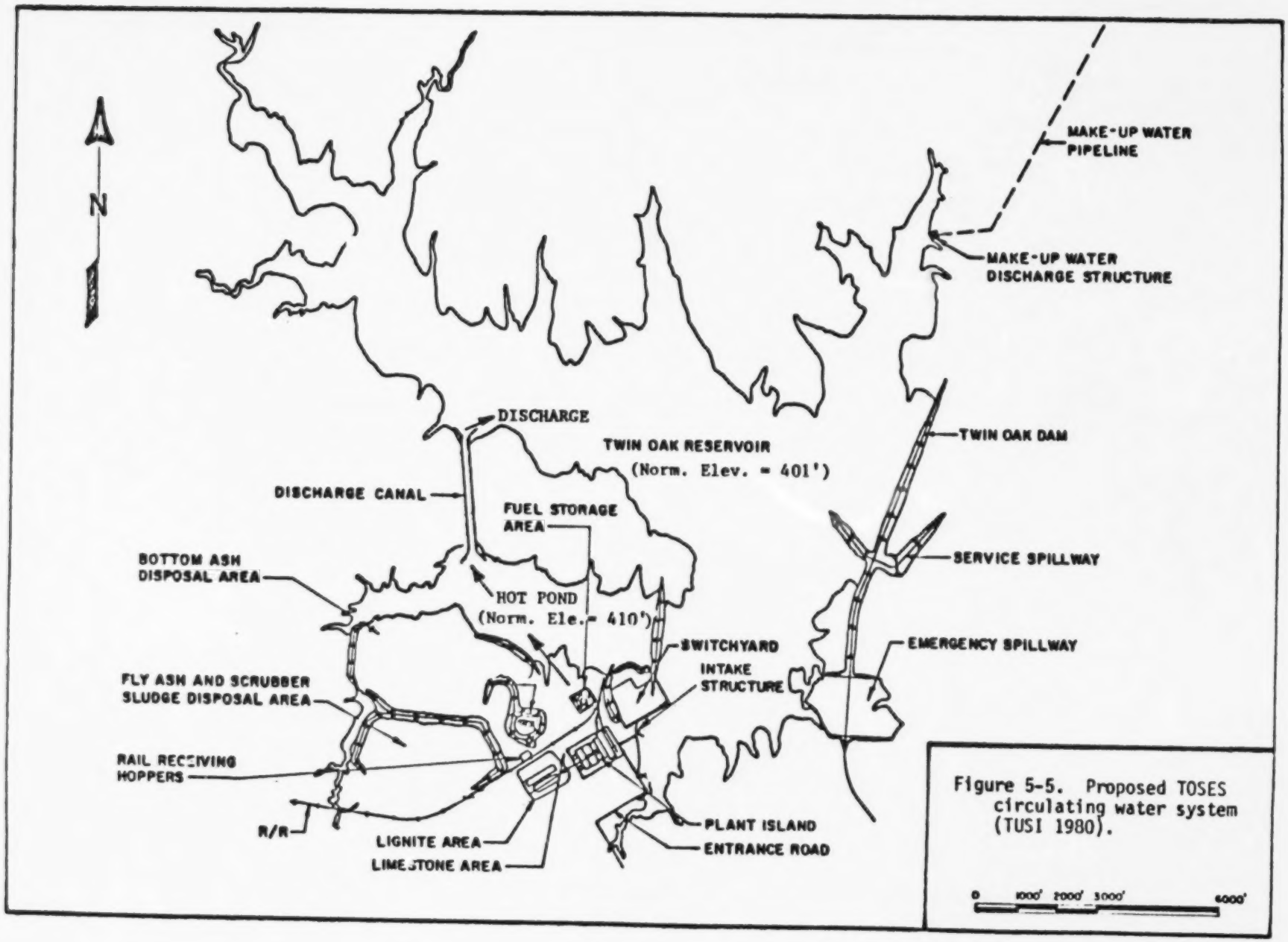

Figure 5-5. Proposed TOSES circulating water system (TUSI 1980).

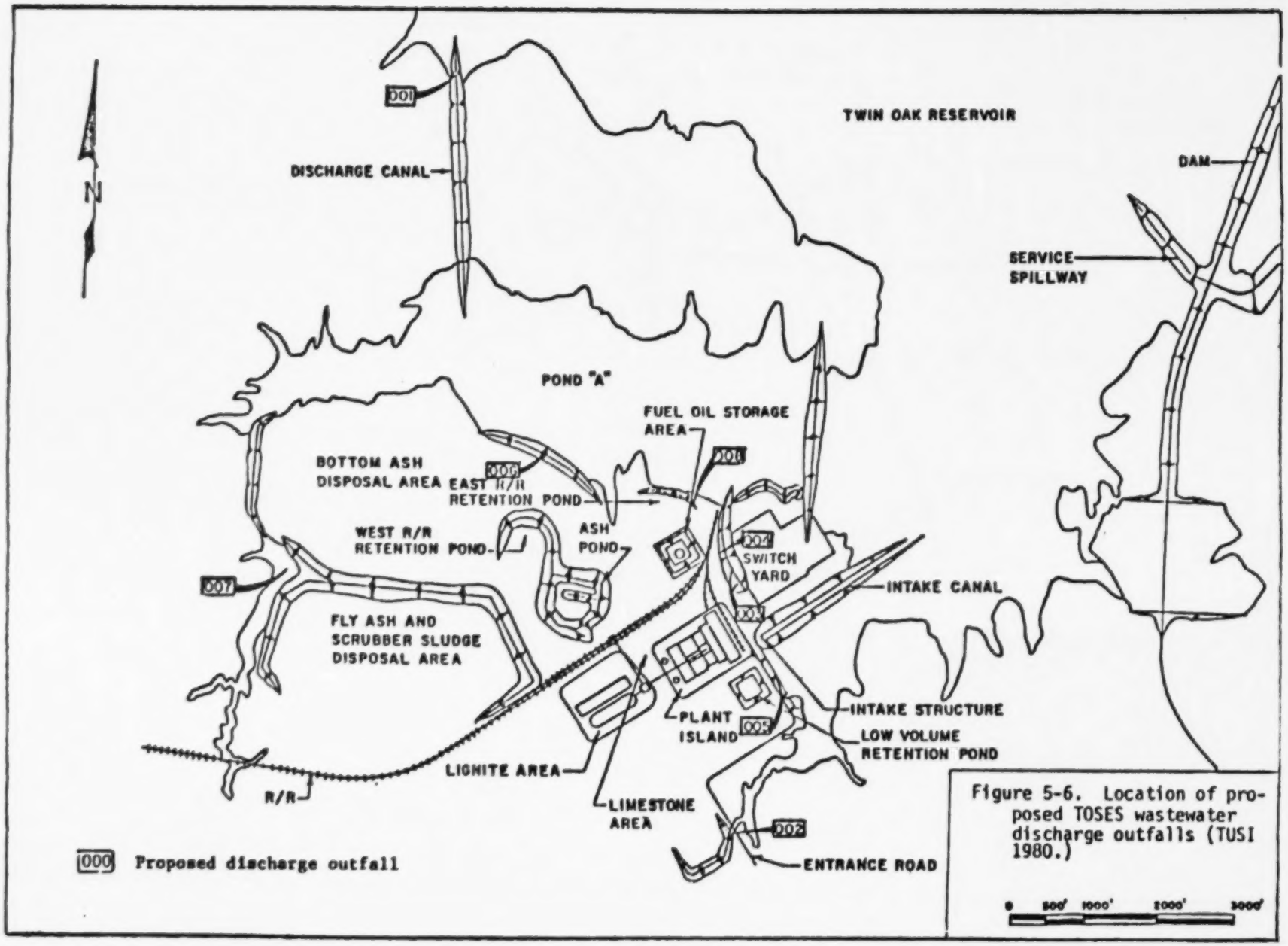

Figure 5-6. Location of proposed TOSES wastewater discharge outfalls (TUSI 1980.)

Table 5-10. Personnel requirements for construction and operation of the proposed TOSES, associated transport facilities, and the associated Twin Oak Mine.

	Power Plant Requirements			Mine Requirements		
Year	Construction Personnel	Operation Personnel	Total	Construction Personnel	Operation Personnel	Total
1982						
1983						
1984	350		350	75		75
1985	600	13	613	150	5	155
1986	1,000	81	1,081	100	34	134
1987	1,000	234	1,234	150	235	385
1988	600	312	912	150	415	565
1989	500	353	853	100	464	564
1990	200	353	553	50	596	646
1991		353	353		596	596
1992		353	353		628	628
1993		353	353		734	734
1994		353	353		936	936
1995		353	353		971	971
1996-2018		353	353		971	971

Source: Adapted from Texas Utilities Services Inc. 1980. Environmental information document for Twin Oak Steam Electric Station, Robertson County, Texas. Dallas TX, variously paged.

TABLE 5-13. MAJOR MILESTONES FOR THE FIRST FIVE-YEAR DEPOSIT (DEPOSIT A, B, C AND D)

TIME	EVENT
September 1, 1974	• Ordered dragline #1
November 1980	• Made final modification dragline #1 • Started TRC permit data gathering
September 1981	• Submitted dragline erection site permit to TRC
November 1981	• Received dragline erection site permit from TRC
December 1981	• TRC acceptance of bond on dragline erection site
January 1982	• Completed general mining plan • Began dragline #1 erection site preparation
March 1982	• Received initial shipment of dragline #1 • Put dragline #1 in storage
July 1982	• Received dragline #1 final shipment
January 1983	• Complete detailed 5-year mining plan
October 1983	• Submit completed 5-year TRC permit application
June 1984	• Order dragline #2
August 1984	• Receive first 5-year TRC permit approval
September 1984	• Begin Bremond fuel facilities site preparation

TABLE 5-13. MAJOR MILESTONES FOR THE FIRST FIVE-YEAR DEPOSIT (DEPOSIT A, B, C AND D) (continued)

TIME	EVENT
January 1985	• Begin Bremond fuel facilities construction • Begin railroad spur construction
April 1985	• Begin erection of dragline #1
January 1986	• Begin fuel operations staffing • Begin loading station construction
May 1986	• Complete Bremond fuel facilities • Begin haulroad construction in Deposit A
June 1986	• Receive initial shipment of dragline #2 • Order dragline #3
January 1987	• Receive dragline #2 final shipment and start erection
March 1987	• Begin haulroad construction in Deposit A
April 1987	• Complete dragline #1 • Start mining in Deposit A with dragline #1 • Complete loading station • Complete railroad • Begin lignite loading • Complete haulroads in Deposit A
June 1988	• Complete haulroads in Deposit B • Complete dragline #2 • Start mining in Deposit B • Receive dragline #3 initial shipment and start erection

Table 5-13. Major milestones for the first five-year deposit (Deposit A, B, C and D) (concluded).

TIME	EVENT
January 1989	• Receive dragline #3 final shipment • Submit second 5-year mining permit to TRC*
September 1989	• Receive 5-year TRC permit approval
June 1990	• Complete dragline #3
May 1993	• Work machine in Deposit A
January 1995	• Start mining in Deposit C with dragline #4 • Start mining in Deposit C with dragline #5
March 2001	• Dragline #3 moves to Deposit B
March 2006	• Dragline #1 moves to Deposit D
May 2007	• Dragline #2 moves to Deposit D

*5-year mining permit will be submitted and received every 5 years throughout the life of the deposit.

Source: 1981a. Preliminary mining plan, Twin Oak lignite surface mine, Robertson and Limestone Counties, Texas. Prepared for US Environmental Protection Agency. Dallas TX, variously paged.

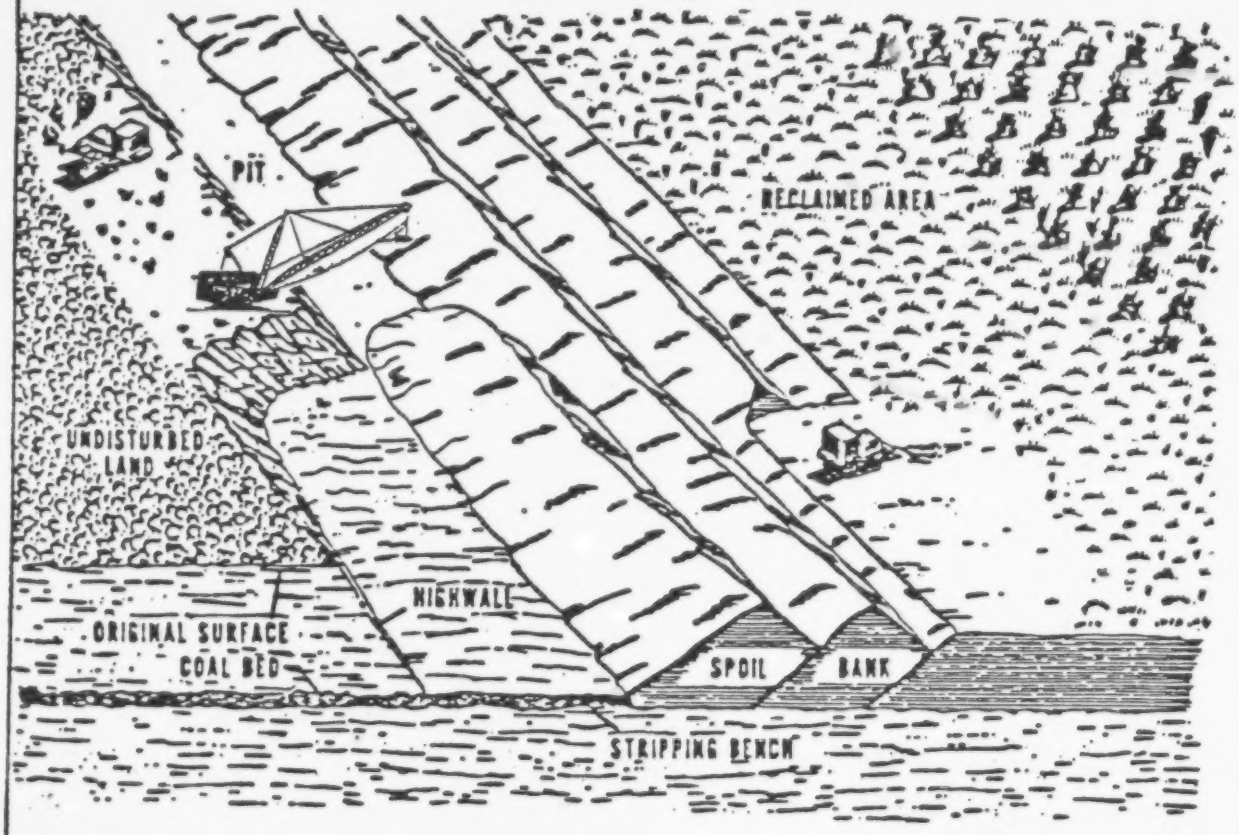

Figure 5-11. Conceptual schematic illustrating proposed surface mining process.

Source: Preliminary mining plan,
Twin Oak lignite surface mine,
Robertson and Limestone Counties, Texas.
Prepared for US Environmental Protection Agency,
Dallas, Texas, variously paged.

Table 5-14. Major equipment and facilities schedule.

1987 - 1 ea. - Dragline - 100 cubic yards
1 ea. - Shovel - 16 cubic yards
1 ea. - Backhoe
1 ea. - Loading Station - 8 mT/yr - Deposit A and B
1 ea. - Fuel Facility - Deposit A and B
1 ea. - Unit Train - 20 cars
10 ea. - 100T hauler

1988 - 1 ea. - Dragline - 100 cubic yards
1 ea. - Shovel - 16 cubic yards
1 ea. - Backhoe
5 ea. - 100T hauler

1989 - 1 ea. - Unit Train - 20 cars

1990 - 1 ea. - Dragline - 100 cubic yards
1 ea. - Shovel - 16 cubic yards

1992 - 1 ea. - Fuel Facility - Deposit C

1993 - 1 ea. - Dragline - 100 cubic yards
1 ea. - Shovel - 16 cubic yards
1 ea. - Loading Station - 3.5 mT/yr. - Deposit C
1 ea. - Backhoe
10 ea. - 100T hauler

1995 - 1 ea. - Dragline - 100 cubic yards
1 ea. - Shovel - 16 cubic yards

2005 - 1 ea. - Fuel facility - Deposit D

2006 - 1 ea. - Loading Station - 8 mT/yr - Deposit D

Source: 1981a. Preliminary mining plan, Twin Oak lignite surface mine, Robertson and Limestone Counties, Texas. Prepared for US Environmental Protection Agency. Dallas TX, variously paged.

Table 6-26. Total suspended particulate emission factors for surface coal mines.

Activity	Units	Emission Factors		
		Lowest	Average	Highest
Overburden Removal	lb/yd^3	0.003	0.021	0.053
Coal Loading	lb/ton	0.002	0.006625	0.014
Haul Roads[a]	lb/veh-mi	11.2	14.1	17.0
Spoil Piles	lb/ac/hr	1.6[b]	1.6[b]	1.6[b]
Fly Ash Dump	lb/hr	3.9	3.9	3.9

a - Vehicle miles by haul trucks; travel by other vehicles on haul roads (pick-up trucks, etc.) is not incorporated into these values.

b - Wind speed in meters per second.

Source: USEPA. 1978c. Survey of fugitive dust from coal mines. Washington DC, variously paged.

Table 6-40. Personnel requirements for construction and operation of the proposed TOSES, associated transport facilities, and the associated Twin Oak Mine.

	Power Plant Requirements			Mine Requirements		
Year	Construction Personnel	Operation Personnel	TOTAL	Construction Personnel	Operation Personnel	TOTAL
1982						
1983						
1984	350		350	75		75
1985	600	13	613	150	5	155
1986	1000	81	1081	100	34	134
1987	1000	234	1234	150	235	385
1988	600	312	912	150	415	565
1989	500	353	853	100	464	564
1990	200	353	553	50	596	646
1991		353	353		596	596
1992		353	353		628	628
1993		353	353		734	734
1994		353	353		936	936
1995		353	353		971	971
1996-2018		353	353		971	971

Source: Adapted from Texas Utilities Services, Inc. (1980). Environmental Information Document for Twin Oak Steam Electric Station, Robertson County, Texas. Dallas, TX, variously paged.

7.5 MAILING LIST FOR FINAL EIS

Listed below are government offices and officials and local organizations which will receive a copy of the Final EIS. In addition, individuals who commented on the Draft EIS will receive a copy of the final document as will those who request a copy.

Federal

USDA Soil Conservation Service
Department of Health and Human Services
US Department of Housing and Urban Development
US Department of the Interior
US Department of the Army Corps of Engineers
Senator Lloyd Bentsen
Senator John Tower
Representative W.P. Gramm

State

Budget and Planning Office
Texas Air Control Board
Texas Department of Agriculture
Texas Department of Health
State Department of Highways and Public Transportation
Texas State Soil and Water Conservation Board
Texas Department of Water Resources
Governor Mark White

Local

Brazos Valley Development Council
Franklin Lions Club
Franklin Public Schools
Bremond Chamber of Commerce
First National Bank of Franklin
Mayor Pryse Metcalfe
Mayor Billy Stellbauer

PART IV. EPA'S PREFERRED ALTERNATIVE

Alternatives evaluated by EPA included (1) the issuance of a new source NPDES permit to TUGCO for the proposed TOSES and (2) denial of the NPDES permit. Conditional requirements or provisions may be added to the permit, if necessary, to mitigate adverse environmental impact. Based on a review of the comments received on the Draft EIS, EPA has determined its preferred action. EPA's preferred alternative is to issue a new source NPDES permit to TUGCO for the proposed Twin Oak Station.

The Twin Oak project is currently being built, and certain environmental effects, including the conversion of approximately 1,000 acres of agricultural land to industrial use, minor loss of wildlife habitat, fugitive dust generation, and soil erosion, have already occurred as a result of plant site grading, railroad spur construction, pipeline construction, and reservoir construction. If construction of the TOSES project is not completed, additional land disturbance activities would not occur, nor would the effects associated with the power plant operation. Also, the company's capital investments of approximately $132,000,000 would be lost as would benefits to the local economy. Because much of the project area is underlain by lignite, it is expected that resource development would eventually occur -- resulting in effects similar to those associated with the proposed project.

Construction and operation of the proposed Twin Oak project (TOSES, reservoir, and associated facilities; transport systems; coal deposits) will have beneficial and adverse effects on the area's existing physical, biological, cultural, and socioeconomic resources. Some of the more notable effects are discussed below.

The topography of the project area will be more level after the project. Long-term displacement of shallow surface sediments has and will occur and the stratigraphy of the mining site will be altered to the depth of the lignite. Erosion of soil will occur, although mulching, seeding, etc. should control excessive erosion. Prime farmlands may potentially be affected. A different soil profile will exist over the project area after reclamation. The productivity of the reclaimed soils will depend largely on the level of management.

Some recharge to the shallow alluvial aquifer will occur around Twin Oak Reservoir. Localized levels and quantities of groundwater will be lowered prior to and during mining. Recharge characteristics of the mined lands will change due to changes in stratigraphy. After mining, some dissolved solids or acidic materials may leach into shallow groundwater systems.

Mine sedimentation ponds will hold water and thus decrease runoff into area streams, especially during periods of low rainfall. Sedimentation ponds will reduce downstream sedimentation and turbidity after their construction and successful reclamation. Some streams will be destroyed or altered. Diversions may result in higher flows and levels of suspended materials (turbidity) in stream systems due to their channels being straighter and shorter.

Minor changes in local air quality will result from increased levels of particulates, SO_2, and NO_x emissions primarily from the operation of the two 750 MW units at the TOSES and fugitive dust generation associated with clearing for all earth-moving activities and active mining. These increased emissions will be long-term, but are not expected to exceed the NAAQS. Radioactive trace emissions are also expected to be below Federal standards.

Noise is not expected to be a major concern because of the predominantly rural setting and sparse population in the vicinity of the proposed project. Noise levels that will increase will be highly localized and of short duration.

Approximately 38,826 acres of predominately pasture and forestland will be cleared. Existing vegetation and associated communities will be destroyed or modified incrementally over much of the area. Habitat for a diversity of terrestrial and aquatic species will be provided in a 10,500 acre fenced and posted area surrounding Twin Oak Reservoir and the plant. Clearing will result in a short-term decrease in acreage of all habitats, and reclamation will result in a long-term decrease in forested and riparian habitat and associated wildlife species.

All Federal regulations and procedures relative to the protection of cultural resources have been satisfied for the TOSES, associated facilities, and right-of-ways along all transport systems. The TRC in consultation with the Texas SHPO will be responsible for assuring protection of cultural resources associated with the mine.

The proposed project will stimulate the area economy by increasing job opportunities both directly and indirectly. Since most of the people are expected to relocate in larger outlying towns such as Waco, Bryan, and College Station, the effects on communities nearest the TOSES and Twin Oak mine are not expected to be as significant as might be expected. Life styles and attitudes may change slightly, since the median age in the project area is expected to decrease. Housing, especially in smaller communities, in the project area is scarce, and any additional demands on housing will worsen conditions. Local government expenditures are expected to increase, along with the demand for community services. After several years local revenues should offset these expenditures. Should more of the labor force than expected reside in nearby communities, housing, wastewater treatment facilities, water supplies, educational facilities, etc. may be inadequate and the stress to these communities more severe.

The incremental conversion of 38,826 acres of predominantly grassland and grassland-forestland (grazingland) to industrial use (power plant and mine development) will occur over the short-term. Mining and reclamation will result in approximately 33,000 acres of predominantly grassland and grassland-forestland being converted predominantly to pastureland. Of the 5,826 acres associated with the TOSES and transport systems, approximately 2,330 acres of predominantly grazingland will be converted to reservoir, while 1,063 acres will be converted to industrial uses. Most of the land used for the transport system can be returned to grazingland following construction.

Forested recreation will be reduced over the long-term at both the power plant site and in mining areas. No recreation is contemplated in the 3,393 acres associated with the TOSES and Twin Oak Reservoir as well as in an additional 8,600 acres fenced around the plant site. Access will be restricted in certain areas before, during, and after mining. Following successful reclamation, some hunting and other grassland recreation should be possible on most mined areas. Most aspects of the proposed project are expected to have adverse visual effects on the area landscape.

Increased traffic volumes and the possibility of road capacities being exceeded are the primary problems relating to transportation. The most significant effects will occur during the construction stage of the power plant. Upgrading of some area roads will occur as a result of the proposed development.

Adequate supplies of fuels necessary to construct, operate, and maintain the proposed development presently exist in or near the project area. Lignite deposits in the area will be irretrievably committed to generation of electrical energy. Electrical energy generated by the TOSES will be provided to meet consumer demand in the system service area in 1988.

EPA's new source NPDES permit (included as the Appendix of this Final EIS) for the TOSES establishes effluent limitations and monitoring requirements for wastewaters discharged. In response to comments received on the Draft EIS and draft NPDES permit (contained as Appendix C of the Draft EIS), the draft NPDES permit has been revised to include limitations and monitoring for selenium from two of the nine outfalls. EPA's NPDES permit is designed to protect the water quality of the receiving stream.

Shortly after, or concurrent with EPA's filing of this Final EIS with the EPA Office of Federal Activities, the draft NPDES permit for wastewater discharge from the Twin Oak Steam Electric Station will go to public notice. EPA's final decision regarding permit issuance will not be made until after expiration of the 30-day review period on the Final EIS and expiration of the 30-day public notice period on the permit. Any additional comments received during these 30-day periods will be considered prior to a final decision being made.

APPENDIX
EPA'S DRAFT
NPDES PERMIT

Permit No. TX0068021
Application No. TX0068021

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Texas Utilities Generating Company
2001 Bryan Tower
Dallas, Texas 75201

is authorized to discharge from a facility located at Twin Oak Steam Electric Station, Robertson County, Texas

to receiving waters named Twin Oak Reservoir, thence to Duck Creek, thence to the Navasota River

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

Myron O. Knudson, P.E.
Director, Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Outfall 001

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 001 - condenser noncontact cooling water.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	1470	1470
Temperature (°C)	N/A	N/A	43.3(110°F)[2]	46.1(115°F)[3]
Total Residual Chlorine[4]	N/A	93(204)	N/A	0.2 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Continuous[1]	Record
Temperature	Continuous[1]	Record
Total Residual Chlorine[4]	1/week	Grab

* Report
1 May be pumping records
2 See Part III, paragraph C
3 Instantaneous maximum
4 See Part III, paragraphs D and E.

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored N/A.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Twin Oak Reservoir.

2. Outfall 002

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 002 - lignite and limestone area runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	N/A	N/A	N/A	50 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week[1]	Grab

* Report
[1] During periods of discharge

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Twin Oak Reservoir.

3. Outfall 003

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 003 - sanitary sewage.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	N/A	N/A	30 mg/l	45 mg/l
Biochemical Oxygen Demand (BOD_5)	N/A	N/A	30 mg/l	45 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week	Grab
Biochemical Oxygen Demand	1/week	Grab

* Report

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Pond "A" of Twin Oak Reservoir.

4. Outfall 004

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 004 - oil storage area runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Oil & Grease	N/A	N/A	15 mg/l	20 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week[1]	Grab
Oil & Grease	1/week[1]	Grab

* Report
[1] During periods of discharge

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample[1].

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Pond "A" of Twin Oak Reservoir.

5. Outfall 005

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 005 - low volume wastes.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Oil & Grease	N/A	N/A	15 mg/l	20 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week	Grab
Oil & Grease	1/week	Grab

* Report

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Twin Oak Reservoir.

6. Outfall 006

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 006 - bottom ash sluice water.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	28.7(63)[1] 57.4(126)[2]	N/A	30 mg/l	100 mg/l
Oil & Grease	14.6(32)[1] 29.2(64)[2]	N/A	15 mg/l	20 mg/l
Total Selenium	N/A	N/A	N/A	0.2 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week	Grab
Oil & Grease	1/week	Grab
Total Selenium	1/week	Grab

* Report
[1] One unit in operation
[2] Two units in operation

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Pond "A" of Twin Oak Reservoir.

7. Outfall 106

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 106 - chemical metal cleaning wastes.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Iron, Total	N/A	N/A	1.0 mg/l	1.0 mg/l
Copper, Total	N/A	N/A	1.0 mg/l	1.0 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Iron, Total	1/week	Grab
Copper, Total	1/week	Grab

* Report

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored N/A.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to commingling with ash transport water and discharge to the bottom ash pond.

8. Outfall 007

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 007 - fly ash and FGD system water accumulation; rainfall drainage from FGD and ESP pipe race area.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Oil & Grease	N/A	N/A	15 mg/l	20 mg/l
Total Selenium	N/A	N/A	N/A	0.2 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week[1]	Grab
Oil & Grease	1/week[1]	Grab
Total Selenium	1/week[1]	Grab

* Report
[1] During periods of discharge

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample[1].

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Pond "A" of Twin Oak Reservoir.

9. Outfall 008

During the period beginning the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 008 - railroad runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	(*)	(*)
Total Suspended Solids	N/A	N/A	30 mg/l	100 mg/l
Oil & Grease	N/A	N/A	15 mg/l	20 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/week[1]	Grab
Oil & Grease	1/week[1]	Grab

* Report
[1] During periods of discharge

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample[1].

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge to Pond "A" of Twin Oak Reservoir.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

NONE

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding paragraph A-4, above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph B-3 and "Upsets" Section B, Paragraph B-4, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c and d of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph D-6 (24-hour notice).

d. Prohibition of bypass.

(1) Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under paragraph c of this section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph d(1) of this section.

4. Upset Conditions

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph c of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the specific cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in Section D, Paragraph D-6.

(4) The permittee complied with any remedial measures required under Section A, Paragraph A-3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than $\pm$ 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow measurement devices can be obtained from the following references:

a. "A Guide to Methods and Standards for the Measurement of Water Flow", U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U. S. Government Printing Office, Washington, D. C. 20402. Order by SD catalog No. C13.10:421).

b. "Water Measurement Manual", U. S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U. S. Government Printing Office, Washington, D. C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027).

c. "Flow Measurement in Open Channels and Closed Conduits, U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

d. "NPDES Compliance Sampling Manual", U. S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration [8FFS], Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1). Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a DMR form postmarked no later than the 28th day of the month following the completed reporting period. The first report is due _____. Duplicate copies of DMR's signed and certified as required by Section D, Paragraph D-11, and all other reports required by Section D, Reporting Requirements, shall be submitted to the Regional Administrator and the State at the following addresses:

Myron O. Knudson, P.E., Director
Water Management Division (6W)
U.S. Environmental Protection Agency
Region VI
First International Building
1201 Elm Street
Dallas, Texas 75270

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless other wise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, time and methods of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified in Section C, Paragraph C-5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit.

b. Any upset which exceeds any effluent limitation in the permit.

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Section D, Paragraphs D-1, D-4, D-5, and D-6 at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D-6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the "notification levels" described in 40 CFR 122.61.

b. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

11. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice-president;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above.

(2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency

and the Regional Administrator. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER CONDITIONS

A. There shall be no discharge of polychlorinated byphenyl transformer fluid.

B. The "daily average" concentration means the arithmetic average (weighted by flow value) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during that calendar day.

The "daily maximum" concentration means the daily determination of concentration for any calendar day.

C. Daily average temperature is defined as the flow weighted average temperature (FWAT) and shall be computed and recorded on a daily basis. FWAT shall be computed at equal time intervals not greater than two hours. The method of calculating FWAT is as follows:

$$\text{FWAT} = \frac{\text{SUMMATION (INSTANTANEOUS FLOW X INSTANTANEOUS TEMPERATURE)}}{\text{SUMMATION (INSTANTANEOUS FLOW)}}$$

D. The term "total residual chlorine" (or total residual oxidants for intake water with bromides) means the value obtained using the amperometric method for total residual chlorine described in the latest edition of "Standard Methods for the Examination of Water and Wastewater".

E. Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger domonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

F. Based on information submitted by TUGCO, the intake structure design is approved for best technology available pursuant to section 316(b) of the Clean Water Act.